A STUDY OF FOOD ACCESS, FOOD HYGIENE, ENVIRONMENTAL SANITATION, AND COPING MECHANISMS OF THE HOUSEHOLDS AT SLUM AREAS

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SUMMARY

In Jakarta many slum areas were found. Approximately 200,000 people live on only 20 hectares of land inhabited by about 150,000 homes that are difficult to control. It is therefore natural for the people to be haunted by a sense of fear, among others, the existence of infectious diseases such as diarrhea and malnutrition caused by poor eating habit in the household. Some indicators that can be used to determine whether an area is classified as a slum or not are by looking at: the density level of the area, ownership of land and buildings as well as the quality of existing facilities and infrastructure in the region.

The objectives of the study were: (1) analyzing the socio-economic characteristics of the households including age, sex, family size, education, employment, income and home ownership; (2) analyzing the children's school enrollment and working children; (3) analyzing the knowledge, attitude and behavior of the housewives about nutrition and health; (4) analyzing household eating habits use the food frequency; (5) analyzing safety of food consumed by the households; (6) analyzing the nutritional status of infants, toddlers and pregnant women by anthropometric measurements; (7) analyzing the morbidity of the whole family (father, mother and child) as diarrhea, Acute Respiratory Infections (*ARI*), and skin diseases; (8) analyzing healthy-life behavior including the use of clean water, rubbish disposal, and sewage and; (9) analyzing the coping mechanisms to support the household food sufficiency.

The research was conducted in slum areas of Jakarta and lasted for 12 months, starting from preparation to writing a final research report. The population in this research refers to the households who are in the slum areas along the rail way in Senen Sub-District and along the riverbank in Tebet Sub-District, Jakarta, Indonesia. Stratified Random

Sampling was applied in this research where the slum areas (slum areas along the *rail way* and along the riverbank) stand as stratum and households stand as sampling unit, the total sample size was n=300.

Data to be collected consist of primary and secondary data. The primary data include: (1) data on social aspects (formal education, occupation, household ownership, asset); (2) data on income and expenditure; (3) data on food consumption (food frequency, food habits, and food recall); (4) hygiene, food safety and environmental sanitation; (5) healthy life styles; (6) anthropometric data; (7) morbidity; (8) knowledge, attitude, practice of nutrition and; (9) coping mechanism for food insecurity. The secondary data are the information related to population, sanitation, rubbish disposal, water sources in the slum area. The data was collected by enumerators. They are student in their eighth semester and graduates in the related fields. Some data were collected by a recalling technique, which could be a weakness of this study because the respondents' remembering ability may be very limited to recall all things. However, this method is the most practically-administered one in an on-field survey.

The data were checked first for editing before the entry. The file structure was arranged by using Microsoft excel. Elementary statistics such as mean, standard deviation, minimum, maximum and proportion were estimated or calculated. Some conclusions were as follows:

1. Family characteristics at riverbank and railway side were relatively similar. Wives and husbands were in their productive age and had low education level. Most husbands worked as labor, merchant and service provider. Most wives didn't work, although some worked to help their husbands by trading. Based on number of family members, most families in the slum area were middle size and big families with family members more than four.

2. Most of house ownership status were personal owned with narrow house condition. Average house floor width at the railway side was 30.8 m² and at the riverbank was 33.4 m². Railway side had higher population density than riverbank. The house usually consists of

two main rooms, bedroom and kitchen with inadequate condition because children and parents sleep together and some house didn't have window.

3. Based on average income level, respondents were in non-poor category because the income was above the poverty line of DKI Jakarta province (IDR 355 480/capita/month) and World Bank (IDR 540 000/capita/month). Expenditure percentage were balanced between food and non-food expenses. The highest food expenses were for side dishes, rice and snacks. While the highest non-food expenses were for transportation, house rent, debt repayments, water bill, phone credit , recreation and saving/money gathering.

4. School children (7-15 years old) who were not schooling anymore were more in railway side (22.6%) than riverbank (2.7 %). Children aged 16-18 years who were not schooling anymore were even higher (>50%) in both slum areas.

5. Households at railway side and riverbank had relatively adequate nutrition knowledge and practice. Whilst, good nutrition attitude were commonly found among wives who lived at riverbank than railway side.

6. Rice was the main staple food and consumed most frequently, other staple food oftenly consumed was noodle. Expensive protein source food like beef, chicken or fresh fish were rarely consumed. Nuts and lentils most frequently consumed were tempeh and tofu, which were consumed almost everyday. Average frequency of fruit consumption was less than once a week. Frequency of snacks consumption at both slum areas was relatively high, and fried snacks were the most frequent.

7. Average energy and calcium adequacy level was still deficit. Almost half of households were in severe deficiency and a quarter were in mild deficiency. Meanwhile, adequacy level of protein, iron (Fe) and vitamin A in both areas were in excess.

8. Analysis of clean water in both slum areas showed it wasn't safe. Although analysis of water from the well at railway side and riverbank showed that it was physically and chemically safe, microbiology analysis showed that the water was not safe for consumption. Analysis of snacks showed rhodamine B was found in 1 out of 6 samples of crackers usually consumed by the community in the slum area. Meanwhile, heavy metal analysis of several vegetables showed they were not safe for consumption.

9. Communities living in this slum area were facing double burden nutritional problem. The prevalence of underweight, wasting and stunting among underfive children were 25.6%, 28.9% and 28.2%, respectively whereas the prevalence of obese underfive children was also high (18.8%). Overnutrition problem not only happened in underfive children, but also in wives as their average BMI were in the obese category. Nonetheless, all pregnant and lactating respondents had good nutritional status as their MUAC percentile was >85%.

10. Slum areas had high morbidity rate. Most common disease suffered by respondents' family members in the last two weeks was ARI such as cough and influenza, while diarrhea and skin disease were rare. Physical access to get treatment was not an issue because there were a lot of health care spread evenly in the area. Community health center was the most visited health care.

11. Less than a half respondent families were members of health fund (Health Insurance, Health Insurance for the Poor, or health fund/ Public Health Insurance). Almost all mothers gave birth with help from health worker such as midwives or doctors, but only half of them routinely visited the Integrated Health Post. Only less than half underfive children received complete immunization. Most families had smoking member and only a few exercised regularly. Breakfast habit was practiced by most of slum community, but consuming variety of food, especially vegetables and fruits everyday, hadn't been a habit.

12. Personal hygiene was good, consisted of several habits such as brushing teeth, washing hands, utilizing clean water, availability of bathroom and toilet. Nevertheless, there was still some people who didn't practice good hygiene like throwing trash to the Ciliwung river.

13. Stress underwent frequently by both slum areas was chronic stress. Economic factors as the main cause of household stress in both slum areas were unmet needs to sustain family expenses and unsatisfied with the family income. Planful problem solving was used as coping strategy to solve the problem. Coping strategies done to fulfill family needs/expenxes were wives also worked, looking for extra work and borrowing money from family or non family especially to purchase basic needs. Trade/pawn gold, electronic and non-electronic stuff were only done by a few respondents. Coping strategies related to food expenses were varied starting from reducing amount of side dishes and staple food bought, reducing children snacks, reducing tea/coffee/sugar consumption, reducing meal frequency, bringing food to the workplace and leaving food for the day after.

14. Coping strategies related to non food expenses such as cleanliness and health, more respondents from the railway side chose low-cost health care or used herbs than modern medication. For education, reducing children pocket money was most commonly done by respondents. Dropping out from school was not considered as a good way by people of slum area. Reducing daily expenses by changing fuel and reducing cigarette purchase were the most difficult coping strategies done by people in both slum areas. There were three coping strategies done by all selected cases in both slum areas to fulfill food needs. They were positive reappraisal, accepting responsibility and self controlling.

From the above findings, the researchers recommended:

1. Bad environment sanitation problem in the slum area is difficult to be solved because of residence density. Slum area arrangement needs to be done by local government by reallocating residence, such as providing inexpensive flats which is affordable by the community.

2. High drop out rate among 16-18 years old children usually related to education cost. Therefore, scholarship and free education which were the featured education program in Jakarta must be supervised continously so implementation at community level will run smoothly.

3. Nutritional problems that still dominant in slum areas need to be anticipated by optimizing nutritional and health service program especially through Integrated Service Post (*posyandu*). If service in Integrated Service Post improve, mother and child participation will increase and this will improve children nutritional status.

4. In terms of food safety, supervision to the food seller is necessary so that they will always notice any illegal additives and will not add it to food that is consumed daily by the people. Consumer education is also necessary in order that people will be more careful and unsafe food can be avoided.

ACKNOWLEDGEMENT

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1. INTRODUCTION

1.1. Background

When reviewing the poverty problems that are often found in urban areas, we find how difficult it is to manage a city such as Jakarta. It is not a simple thing because not only the problems of infrastructure development are essential but also the population problems with all of the consequences, especially, dealing with the urbanization that is difficult to control. Urbanization as a social phenomenon proved to have created pockets of slum areas because the people generally only think pragmatically, that is, they want to change the family economy without considering the feasibility of family life such as fulfilling the need of adequate housing.

A slum is an area with high population density in a town mostly inhabited by the poor. Slums can be found in many big cities in the world. Slums are generally linked with poverty and high unemployment. Slums can also be a source of social problems, namely, crime, drugs and booze. In many poor countries, slum areas also become the center of health problems because the conditions are not hygienic.

In many slums, especially in poor countries, people live in very dense areas so the areas are very difficult to be passed by vehicles such as ambulances and firefighting cars. In addition, the lack of waste disposal services results in the waste piles.

The increase of the number of slum areas also develops in line with the increase of population growth, especially in the third world. Governments in the world today try to handle this problem by relocating slum housing areas with modern housing that has improved sanitation (*usually in the form of houses with many storeys*).

Some indicators that can be used to determine whether an area is classified as a slum or not are by looking at: the density level of the area, ownership of land and buildings as well as the quality of existing facilities and infrastructure in the region.

However, the slum condition can not be generalized from one area to another area because slum is specific and highly dependent on the cause of being run-down. It is not always the case that densely-sparsely populated areas, or areas with a majority of seasonal residents / illegal dwellers are in the category of slums. Therefore, an assessment of the level of squalor should consist of a combination of several indicators of existing slums. The health and home comfort of children who live in slum areas will be disrupted because of the government negligence, that is, not paying attention to environmental hygiene for the people. A research in Kampala, Uganda found that 15% of the slum population used a public pit latrine; 75% used shared-toilets; and 10% had private or non-shared sanitation facilities (Katukiza *et al.* 2010). Those who stay in the slum areas are generally from the countryside and come to urban areas with the aim of improving their household economy; and this is commonly known as urbanism.

In Jakarta, areas near the market, station (*rails*), terminals, and even the riverbank become the main destination for them to stay temporarily, although they have to bear the risk of flood from year to year. However, they feel that earning their living in the city of Jakarta is easier to get money. Sooner or later these areas become permanent residential slums coupled with other social insecurities. As it happens along the banks of Ciliwung River, from year to year the slum dwelling tends to increasingly reduce the width of the river. As a result, the area around the river has become prone to flood because of the disruption of the river flow.

One of the consequences of the urbanization phenomena is the emergence of 'new' poverty, and poverty in rural areas becomes the determining factors that encourage migration to urban areas, and one of the migrants' options is Jakarta (urbanism). This makes the

city arrangement not a simple thing because not only infrastructure development problems become the main concern/issue but also the population problems, particularly, the urbanization which is difficult to control. This led to the City of Jakarta, according to recent data, to become the largest slum areas in Southeast Asia because of the urbanization. The phenomenon of urbanization is much happening in other countries in the world. According to UN Habitat, or the UN Human Settlements Programme, overall, the world now has an additional 55 million citizens of the slums than in 2000. Half of the increase was due to the population growth in slum housing, one-fourth due to urbanization and the other one-fourth due to the people who live in the suburbs whose homes were eroded by urbanization (http://www.bbc.co. uk/indonesia/dunia). Rana *et al.* (2009) found that the number of slums significantly increased in Bangladesh over the last three decades along with the expansion of cities and towns. Rapid urbanization, caused largely by heavy influx of migrants from rural areas, has exerted severe pressure on urban housing and public services in the Metropolitan City of Khulna with which the expansion of infrastructure and basic urban services could not cope. This situation coupled with the destitute economic condition of poor migrants increased slums, resulting in hazardous environmental condition.

In Jakarta many slum areas were found, where the people live in the corners of buildings, among others, in *Pekojan*, *Duri Utara, Duri Kosambi*, *West Jakarta.* Approximately 200,000 people live on only 20 hectares of land inhabited by about 150,000 homes that are difficult to control. It is therefore natural for the people to be haunted by a sense of fear, among others, the existence of infectious diseases such as diarrhea and malnutrition caused by poor eating habit in the household. A similar matter also occurs in India. The UNDP estimates that the slums in India will still increase. At least 42 million people, equivalent to the total Spanish population, live in slum areas in India. India is also struggling with the problem of malnutrition experienced by 57 million children under five (http://dunia.vivanews.com/news/ read). Izutsu *et al.* (2006) found malnutrition among adolescents in

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slum areas in Dhaka, Bangladesh. In addition, a child from the richest household in the slums is more likely to suffer from diarrhea than a child from the poorest family in rural Kenya (Mugisha, 2006).

A number of 1604 slum households in Dhaka, Bangladesh were surveyed. A total of 65% boys and 75% girls enrolled in primary schools. Most were in public or NGO schools; while the wealthier minority was in private schools. Parental income, parental education and location were good predictors of decisions where to educate children.

Social, economic and cultural changes today, in one hand, have provided encouraging results and succeeded in improving the welfare of society. However, at the same time, these changes have not entirely brought beneficial impacts for the household life, especially for those who live in a complete lack such as households residing in slum areas, for example, the needs of their children's education, the needs associated with coping mechanisms to support the adequacy of their household and other needs such as food safety and nutritional status, including needs related to the health of mothers during childbirth (*morbidity*).

There have been many studies that examine the conditions in slum areas. Infrastructure upgrading had Improved health outcomes in urban slums in India (Butala *et al.* 2010), improved mental health, quality of life, and nutritional status of adolescents in Dhaka, Bangladesh (Izutsu 2006), and increased socio-economic had improved sanitation in slums (Isunju *et al.* 2011.). However, there are not many studies related to coping mechanisms to support household food sufficiency, as it will be conducted in this study. Research on poverty that is available at present discusses more definition of poverty, the methodology of poverty calculation and analysis of poverty in general, which largely focused on national descriptive analysis of poverty using income or consumption approach based on the prices of certain commodities. Such research is certainly hard if confronted with the problems of poverty which are more specific. BPS (The National Statictics Board) very rarely conducts a comprehensive study on micro poverty. Until now a routine activity carried out by BPS every year is calculating poverty and descriptively

analyzing the urban and rural poverty in the national, provincial and regency/ municipality levels, using basic needs approach where the data are taken from the *National Socioeconomic Survey* (*SUSENAS*).

Analyzing more deeply the problems of poverty, for example, poverty in urban areas, is an interesting thing to explore, as it will be investigated in this study. The study on urban poverty associated with the slum area has complicated problems either viewed from the root of the problems or from the perspective of policies to overcome them. Thus, the expected results of this study can describe accurately the actual situation in the field. To further examine the problems of poverty that can be viewed from various aspects, is needed more in-depth assessment with a qualitative approach without neglecting the facts that are quantitative, as it will be done in this study.

The typology of urban poverty has socio-economic and cultural dimensions which are more varied, and of course, it implies a more complicated and comprehensive policy. According to BPS (1996) there are three characteristics of urban life, that is, dependence on a money economy (*commodization),* inadequate neighborhood (*environmental hazards*) and individualistic life (*social fragmentation*). Therefore, urban poverty has a multi-dimensional phenomenon that includes low levels of income, health and education, shelter and personal insecurity, and powerlessness. Another view by Irawan (2003) is that due to the lack of social protection and guarantee of personal safety, urban poverty is often characterized as a cumulative deprivation, that is, one poverty dimension that often becomes a cause or ignition/trigger of the other dimensions of poverty. As a result, the urban poor living in slum and dense settlements have difficulty in having an access to get health facilities, basic education and employment opportunities. Even for more specific matters, especially related to food safety, nutritional status, morbidity and coping mechanisms to support food security in households, many have not been done yet.

In fact, Social Minister Salim Asegaf Al'jufrie in a *Coordination Meeting of the Coordinating Ministry for People's Welfare* in Jakarta, explained that the criteria of the houses unfit for habitation, among others, are the house floor is soil and the roofs are leaves. He further said that people who lived in houses unfit for habitation were still a lot but the ability of the Ministry of Social Affairs to rehabilitate rundown homes was less than 10,000 units per year (http://bataviase.co.id/node/519961).

According to the Ministry of Housing Suharso Monoarfa, one of *the Millennium Development Goals (MDGs)* that must be achieved in 2015 is the slums decrease 30 percent. But in fact, the slum areas during 2004-2009 increased from 54,000 hectares to 57,800 hectares. Housing and settlement development program in 2011, according to Suharso, is prioritized to the development of a simple rented flat, facilities and stimulation of self-help housing development, infrastructure and public facilities, as well as the arrangement of the slums. MDGs also aim to address these conditions and standards for water and sanitation as well as pertinent health outcomes. Upgrades in slum household water and sanitation systems have not yet been rigorously evaluated to demonstrate whether there is a direct link to improved health outcomes.

Based on the background mentioned above, we propose to conduct a more in-depth research with the assumption, that there has not been a research that analyzes the aspects of access to food, food security, and coping mechanisms of the households in the slum area in Jakarta.

1.2. Goals and Objectives

1. Analyzing the socio-economic characteristics of the households including age, sex, family size, education, employment, income and home ownership.

2. Analyzing the children's school enrollment and working children.

3. Analyzing the knowledge, attitude and behavior of the housewives about nutrition and health.

4. Analyzing household eating habits use the food frequency.

5. Analyzing safety of food consumed by the households.

6. Analyzing the nutritional status of infants, toddlers and pregnant women by anthropometric measurements.

7. Analyzing the morbidity of the whole family (father, mother and child) as diarrhea, Acute Respiratory Infections (*ARI*), and skin diseases.

8. Analyzing healthy-life behavior including the use of clean water, garbage disposal, and sewage.

9. Analyzing the coping mechanisms to support the household food sufficiency.

2. LITERATURE REVIEW

2.1. Characteristics of Slum Areas

According to UU (Law) No 1 Year 2011 of housing and settlement areas, a slum settlement is a settlement which is not reasonably comfortable to live due to disorder buildings, a high density level of the buildings, and the quality of the facilities and infrastructure which do not meet the standard. A slum housing is a housing which undergoes a quality degradation of the functions of housing as a place to stay. The following are variables for determining slum areas.

Table 2.1. Variables of slum (BPS of Province DKI Jakarta 2011)

	Variables	Indicators of being slum	Criteria of being slum
1.	Population density	The population density above the average of the population density (x + ½ SD)	> 1700 people per ha
2.	Spatial Planning of Buildings	The spatial planning of the buildings is not in order/ disordered	>37.50% RT
3.	Building construction	% poor buildings	>8 percents
4.	Building Ventilation	% ventilation of the building in poor condition	8.69 percents
5.	Building density	The building density above the average of the building density (x + ½ SD)	>354 buildings per ha
6.	Road	The road surface is not asphalted/ cemented, or the asphalted/cemented road surface is damaged	>34.38% RT

Table 2.1. Variables of slum (BPS of Province DKI Jakarta 2011) (Continued)

	Variables	Indicators of being slum	Criteria of being slum
7.	Drainage Ditches	Drainage ditches are flooded/there is no drainage ditch	>18.75% RT
8.	Privy/toilet	% Bad privy/toilet (public privy or no privy/toilet)	>5.09 %
9.	Frequency of rubbish taking	More than three days in a week	>12.50% RT
10.	Ways of rubbish disposal	Not disposing rubbish in the rubbish areas	>13.54%
11.	Street lighting	No lighting for public streets	>26.04% RT

Notes:
1) RT is an area which covers several households
2) RW is an area which covers some RTs
3) BPS is Indonesian Central Board of Statistics

Slum areas emerge as a result of the imbalance between the need of settlement and the population growth, where people keep on increasing, whereas, the width of the area remains the same, not increased. The slum areas are usually occupied by people whose socioeconomic condition is relatively low. They can afford to stay in a reasonably comfortable location. The slum areas, in addition to disrupting the beauty and city order, result in the low health degree in general. The following is the classification of slum RW in 2011 according to BPS of DKI Jakarta Province.

Table 2.2. Clasification of slum (BPS of DKI Jakarta Province 2011)

Clasification of being slum	Score limit
Severe	score > x+2 SD
Moderate	+1 SD ≤ score ≤ +2 SD
Light	x < skor < +1 SD
Very Light	-1 SD ≤ score ≤ x
Not Slum	score < x-1 SD

In general, the areas of slum settlements can be classified into seven typologies, namely, fisherman slum settlements, slum settlements around the business centers, slum settlements in the central city, slum settlements in the suburbs, slum settlements in the areas of the rise and fall of the tide, slum settlements in the areas full of disasters, and slum areas in the riverbank (Heryati 2008). In order to create a beauty and city order as well as to improve the health degree of the people, in the plan of the city layout a serious attention need to be given to components of cleanliness and environmental health, particularly in the slum areas. There are three aspects which make environment turn to be slum, that is:

a. Weaknesses of the human resources: the low education level and the lack of the people awareness of the importance of health make them unable to plan their settlements in order to be healthy.

b. Economic factors: people living in the slum pockets generally do not possess any regular income.

c. Land ownership for residing: many people dwelling in slum settlements occupy lands which are not their own (such as occupying government lands).

2.2. School Participation

In 1994 the Indonesian government established *Wajib Belajar Pendidikan Dasar 9 Tahun* (A 9-year Compulsory Basic Education/ CBE), that is intended to guarantee that all citizens of 7-15 get basic

education up to a junior high level (*SMP/MTs*). UUD 1945 dan Undang-Undang Nomor 20/2003 of National Education System also requires the government to provide the basic education service free of charge. In line with the program and law, Strategic Plan of the National Education 2005-2009 (*Rencana Strategis - RENSTRA pendidikan nasional 2005-2009*) and Education for All/EFA (*Rencana Kerja Pendidikan Untuk Semua*) have been matched (Bappenas, 2010).

For poor people, education fees often become a big burden that this makes their children unable to go to school. Poverty was the main factor of the low figure of basic education participation, where around 70% of students who did not attend a school were due to a financial disability (Bappenas, 2010).

Many children have to work and leave their school. Various government programs which are intended to provide financial assistances for the students of poor parents and to improve the school facilities, such as, *BOS* (assistance for school operation), *BOS Buku* (assistance for book provision), dan *BSM* (financial assistance for students of poor parents) have contributed in increasing the distribution of an educational access. The implementation of program *BOS* has nationally given a positive impacts towards the distribution of education access, especially for poor people either in rural or urban areas. The provision of BOS funds is meant to support the implementation of the policy, basic education free of charge. However, the poor households still face difficulties to fulfill other educational costs, such as, transportation fees, books, and school uniforms (Bappenas, 2010). Thus, a big challenge faced is to make sure that children from poor people are able to gain an opportunity and access to good basic education by ensuring that the programs are strengthened, accelerated and more focused to the areas and groups of people who badly need them to reduce the sharp disparity of school participation figures among provinces and regencies or cities.

2.3. Food Consumption

According to Riyadi (2006), one or a group of people's food consumption is influenced by a variety of factors. There are four major factors that affect one's daily food consumption, that is, food production for the household needs, financial expenditure for household foods, nutritional knowledge and availability of foods. Food consumption is the quantity of single or various kinds of food consumed by one or a group of people to fulfill physiological, psychological and sociological needs. In regards to physiological needs, food consumption is an effort to fulfill a desire for food (because of being hungry) or to fulfill nutrients required by the body. In regards to the psychological needs, food consumption is to fulfill emotional desires or appetite, while for the sociological needs, it is to maintain the relationship among people in the family and society (Sediaoetama, 1996).

Based on the type of data, food consumption can be measured through two ways, that is, quantitative and qualitative methods. Qualitative methods are usually used to know food frequency. Data which can be obtained from the consumption frequency is frequency by kinds of foodstuffs and to elicit information on food habits as well as ways of getting the foodstuffs. Qualitative methods of food consumption measurement are, among others, *food frequency, dietary history, telephone,* and *food list.* Whereas, quantitative methods are meant to know the amount of food and calculated by using *Daftar Komposisi Bahan Makanan* (Food Compositions Table) or other tables of references. Quantitative methods used to measure consumption, among others, are a-24 hour food recall, estimated food records, food weighing, food account, inventory method, and household food records (Gibson, 1990).

A-24 hour food recall is a method for collecting data on food consumption that is frequently used. A-24 hour food recall is a method that requires respondents to recall and record the quantity and kinds of food and drink that have been consumed for 24 hours. The process of recalling is guided by a trained interviewer, ideally an

expert in nutrition, or other people who understand about food and nutrition. This method is good enough to be implemented in surveys towards groups of people. The advantages of this method are easy to be implemented and the respondents are not required to be literate because those who provide the model of food, and record are the interviewer (Arisman, 2002).

2.4. Nutritional Knowledge

Knowledge is a result of understanding and this occurs after people hear, observe, touch, taste or feel an object, where most of the knowledge is obtained by people through their eyes and ears. Knowledge or cognition is a dominant matter that is absolutely important for shaping a behavior or action. Actions which are based on knowledge will be more permanent than those which are not (Notoadmojo 1993). The degree of one's nutritional knowledge influences his/her attitude and behavior in selecting foods, which will ultimately affect his/her nutritional status. It is expected the higher one's nutritional knowledge the better his/her nutritional status (Khomsan *et al.* 2007).

According to Khomsan (2000), the assessment of nutritional knowledge can be done by an instrument which uses a multiple choice form. This instrument can be in a form of question or incomplete statement followed by several options for each item. Nutritional knowledge is divided into three categories, namely:

Good nutritional knowledge: score > 80%

Moderate nutritional knowledge: score 60 - 80%

Less nutritional knowledge: score < 60%

Attitude is one's tendency to behave in facing a stimulus. For example, one who possesses a positive value towards hot foods will always choose or buy hot foods every time he/she finds hot foods. On the other hand, one who responds negatively towards hot foods will always avoid hot foods when coming across hot foods. This attitude

may happen to things, situation, person, group, values and all things around the people (Muljono 2000).

Practice is one's response to a stimulus. A response or reaction can be passive (knowledge, perception, attitude) and can be active (real action or practice). Anything which is obtained in a form of knowledge, which is responded by one in a form of attitude, is reflected in practice (action) as a component of behavior.

2.5. Food Safety

According to *Joint* FAO/WHO *Expert Committee of Food Safety* food safety is any conditions and efforts which are required during production, processing, storage, distribution, and preparation of foods to ensure that the foods are safe, free from diseases, wholesome, and good for human consumption.

Uncertainty of food safety is an enemy of consumers' racial behavior and business investment in a food system. Food safety becomes very crucial nowadays due to two factors: (1) food is the main path of transmission of diseases agents (bacteria, virus and other germs), food is connected with development, because this determines individual and community health, national productivity, as well as it has export potentials and generates revenues (Sulaeman & Syarief, 2007).

SNI 01-0222-1995 defines a food additive as a stuff which is not commonly used as food and neither as a specific food ingredient, may contain or not contain any nutrients, which is deliberately added to a food as a technology (including organoleptics) during producing, processing, preparing, treating, packing, wrapping, storing or transporting the food to create or it is expected to create (directly or indirectly) a component or those which often influence the specific characteristics of the food. Food additives which are frequently used are sweeteners, preservatives, and dyes. Formalin, borax and textile dyes are food additives which are prohibited to be used according *Peraturan Menteri Kesehatan Republik Indonesia* (A Law issued by Health Minister of Indonesia).

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The use of borax and formalin is damaging health of the people. In Indonesia, several laws which prohibit the use of borax and formalin as food preservatives are *Peraturan Menteri Kesehatan No. 722/Menkes/Per/IX/1988, Peraturan Menteri Kesehatan No. 1168/Menkes/Per/X/1999, UU No. 7/1996* about Food dan *UU No. 8/1999* about Consumer Protection.

Borax or in market well known as *pijer*, is usually added during food processing to improve rubberiness of the food, as well as to create a delicious taste and solidity, particularly, of foods containing starch (Saparinto & Hidayati 2006). When consumers consume foods containing borax, this will not directly result in bad effects to the consumers' body; however, the small amount of borax will be absorbed by the consumers' body cumulatively. When the dosage is high enough, the borax in the body will show some signs and symptoms, such as, being dizzy, vomiting, having diarrhea and having stomach cramps. For children and babies, if the dosage of borax they consume reaches 5 g or more, this may cause death. Among adults, death will happen if the dosage they consume reaches 10 to 20 g or more (Winarno & Rahayu, 1994).

Formalin is a trade mark of solution of formaldehida of 36-40% in water. The use of formaldehida in food may cause toxication in the human body with the following signs and symptoms: difficulty to swallow, queasy, acute stomachache and vomiting, having diarrhea containing blood, depression of the nervous system, or blood problems (Winarno & Rahayu, 1994).

2.6. Nutritional Status

Nutritional status is an expression of a balanced state in certain variables or an expression of nutriture in some variables. Nutritional status is an ultimate result from the balance between the nutrient input and the nutrients required by the body (the nutrient output) (Supariasa *et al.* 2001).

Direct assessment of nutritional status can be grouped into four kinds, that is, anthropometry, clinics, biochemistry, and biophysics. In general, anthropometry is the size of human body. Anthropometry has been widely used to measure the nutritional status of a community. A variety of antropometric measurements consist of body height, body height, upper arm circumference, and fat under the skin. Viewed from the nutritional side, nutritional anthropometry is related with various kinds of measurement of body dimension and body composition of different ages and nutritional levels. Anthropometry is used to see the balance between protein and energy intakes. The imbalance of this can be seen from the pattern of physical growth and the proportion of body tissue, such as, fat, muscles, and amount of water in the body (Supariasa *et al.* 2001).

The body weight for age (W/A) is considered to be uninformative if it is not followed by an information of body height for age (H/A). The age factor is of paramount importance for determining one's nutritional status. Inaccuracy in determining one's age will make the interpretation of nutritional status become wrong. The result of accurate measurement of body height and body weight will be meaningless if the measurement of the age is inaccurate (Riyadi, 2003).

The deficit of the body height for age (H/A) shows accumulative nutritional inadequacy and health in a long period. Body weight for age (W/A) is influenced by children' body height and their body weight. A W/H index can provide a description of a body weight proportion relative to the body height. An index of W/H is a good indicator to state one's nutritional status because W/H can provide a description of the body weight proportion relative to the body height so this index can be used as an indicator of thinness (Riyadi, 2003).

Monitoring the nutritional status of children under five through their W/A and H/A is more accurate if using the WHO-NHCS standards and they are calculated based on the standard deviation (z-score). The advantage of using z-score is the result has been standardized according to the standard deviation so it can be compared for each age group

and anthropometry index. The determination of prevalence through z-score is more accurate than through the percentage of median, which provides greatly varied results, either by age group or each index. Scores of children's nutritional status can be grouped into four categories, namely, good, moderate, low, and poor (Gibson 1993).

The nutritional status according to the body weight fot age (W/A) tends to reflect the present nutritional status. The body weight illustrates the body mass (muscles and fat), that is very sensitive to a sudden change, for example, suffering from infectious diseases, decrease in appetite for food or in the amount of food consumed. On the other hand, the index of body height for age (H/A) illustrates the past nutritional status. This is because the body height illustrates the skeletal growth, which is in normal condition, is in line with the age increase (Riyadi, 2003).

2.7. Morbidity

Morbidity and nutritional status are variables which reflects a health status. The morbidity includes the prevalence of contagious and non-contagious diseases. The health degree or health status is the degree of individual, group or community degree which measured by the mortality rate, life expectation, nutritional status, and morbidity rate. Health is a complicated matter so that it is impossible to measure all factors that affects it directly or indirectly, and therefore, it is needed an instrument which is able to provide indications that reflect health condition. Health indicators can be used to assess health status, to monitor the improvement of health condition and as an equipment to evaluate health programs (Balitbangkes, 2008).

According to Sediaoetama (2006), one of the indicators which can be used to assess the nutritional status of a community indirectly is morbidity, mortality, and the low birth weight of newly-born baby. Principally, the health degree is influenced by four determinant factors, that is, inborn factors, health service, behavior and environmental factors (physics, biology, and community). The last two factors

are determinant ones which very significantly affect the degree of community health (Sukarni 1994).

Factors affecting health are disease sparks, human beings, and environment. The imbalance among the three factors may cause health problems that lead to the decrease of one's health degree. Disease sparks may come from inside or outside of the body. The stamina of the human body will affect one's vulnerability to diseases. Environment is everything which is present around human beings and can affect their life (Supariasa *et al.* 2001).

Infectious diseases are those which are caused by microorganism, such as, bacteria, viruses, fungi, protozoa, worms etc. (Shulman *et al.* 1994). The infectious diseases take place due to the presence of an agent which penetrates into the vulnerable human body (host). The spark of an agent is a combination among the time and the environmental condition which influence the life perpetuity of the agent, the penetration area, and the presence of other reservoirs from the agent. Mobility and interpersonal contact among population and the period of previous immunity with the same agent or belonging to the same household influence the number of people vulnerable to diseases (Atmodjo & Rustiawan, 1996).

2.8. Clean and Healthy Life Behavior

Clean and healthy life behavior (CHLB) is a set of behaviors practiced at awareness as a learning result that makes one or a household able to help oneself in his/her health matters and to play an active in realizing social prosperity. Clean and healthy life behavior in the household level includes personal hygiene (washing hands with soap, brushing teeth, etc.), not smoking, child-birth assisted by medical staff, weighing children under five, immunization, household nutrition (having breakfast, consuming a variety of food), and becoming members of a health insurance or of public health maintenance insurance (Depkes, 2007).

Child-birth which is assisted by medical staff (doctors, midwives, and other paramedic staff) use a safe, clean and sterile equipment so this prevents infections and other health problems. Smokers consist of active and passive ones. Both of them are equally dangerous, that is, they may cause health problems, such as hair-fall, eye problems, and a chronic lung disease, tooth damage, stroke, skin cancer, infertility, impotent, cervix cancer and miscarriage (Depkes, 2007). The purpose of immunization is to make children immune to diseases so this can reduce the morbidity and mortality rate as well as reduce disability due to certain diseases (Hidayat, 2004).

Body weight is a health indicator important for everyone. Therefore, it is necessary to check one's body weight regularly and to find out whether the body weight is ideal, less or over. An ideal body weight shows a good or normal nutritional status (Soekirman, 2000).

Having breakfast is important to do prior to conducting some physical activities in the morning. Firstly, the benefits are having breakfast can provide carbohydrate which is ready to be used to improve the blood sugar level. With a normal blood sugar, enthusiasm and concentration for working can be better so this positively affects the improvement of productivity. Secondly, basically having breakfast will provide an important contribution of some nutrients required by the body, such as, protein, fat, vitamin, and mineral. The availability of these nutrients is important for making the physiological process in the body function well (Khomsan, 2003).

The program of health finance for poor community is important to stimulate the improvement of the public health level. The extension of coverage and improvement of public health service quality must be done simultaneously and followed by some efforts to trigger community participation to conduct a healthy life behavior (Balitbangkes, 2008).

A habit of washing hands before eating can reduce morbidity as many as two to three-fold (Hardinsyah, 2007). Making tooth-brushing before going to bed and after eating become a habit is a good example of a personal hygienic practice. Brushing teeth is intended to clean the

mouth from food left in it so its fermentation does not last so long that it can cause any plaque. Accordingly, brushing teeth can prevent tooth damage (PDGI, 2011).

Doing an exercise is a physical activity that can be performed regularly for various reasons, among others, for health, physical fitness, recreation, education, and achievement (Irianto, 2007). Everyone needs to consume a variety of food in an adequate amount. Various kinds of food will provide great advantages towards one's health. Each food material in a balanced menu composition will complete one another. Food from various serves can guarantee the fulfillment of adequate energy sources, building nutrients and regulating nutrients for one's nutritional needs (Khomsan & Anwar, 2008).

In addition to 10 indicators mentioned above, the thing that also needs to be considered in the implementation of clean and healthy life behavior is environmental cleanliness which include the availability of privy/toilet, sources of clean water, location for rubbish, drainage for wastewater or sewage, enough room-air or enough ventilation, and not all floor areas are earth (Dinkes, 2006).

2.9. Coping

A critical condition or under stress for a long time may cause a stress among individuals. Keith (2009) states several factors that affect one's stress level, namely, 1) submissive to whatever the condition is; (2) experiences in handling a stress; (3) individual characteristics; (4) perception towards stress; (5) coping strategy; and (6) social supports. Synder (2001) explains that coping is a process of thinking, feeling, or doing something as fulfillment of psychological satisfaction.

Coping refers to some continual responses as a consequence of stress. Factors of coping skills are: (1) problems focused; (2) environmental organization; (3) emotion focused; and (4) self organization. Coping is defined as one's cognitive efforts and behaviors to organize demands for different problems. Based on the coping process, an individual

can (1) estimate a threat or opportunity in his/her own environment; (2) evaluate the demands and resources or supporting powers in the environment, as well as ability to organize the elements; and (3) utilize a strategy to reduce a negative consequence that may come up in a situation that is full of stresses. When facing causal factors of stresses, one utilizes a coping strategy to reduce a stress that may emerge (Lazarus & Folkman, 1984).

To face a stress, a household is necessary to improve an effective coping strategy. The household's effective coping strategy and process function as a mechanism so that the household's functions can be reached. Without an effective coping strategy, economic functions, socialization, household maintenance cannot be achieved optimally (Friedman, 1998). Because of that, household coping is an important process that makes the household able to reach the household's own functions optimally. Lazarus and Folkman (1984) propose two kinds of coping, namely, *emotion focused coping* dan *problem-focused coping.*

Information on coping strategies shows that economic crisis has made poor households withdraw their saving, mortgage their belongings or assets, extend their working hours, or relying incomes on other community members (community-based income-sharing traditions) so that they are free from a worse condition (Soekirman, 2000).

According to Martianto *et al.* (2006), households' *coping strategy* can be classified into two, that is, an adaptation phase and a divestment phase. The adaptation phase is done when the condition of a household's food insecurity is moderate, while divestment is taken when the condition of a household's food insecurity is high and critical. The strategies done in the adaptation phase, among others, are changing the diet pattern, reducing the food frequency, consuming unusual foods, borrowing and looking for jobs in other places temporarily. Whereas, in the divestment phase, the strategies taken are selling the productive assets, and migration (moving to other places permanently).

3. CONCEPTUAL FRAMEWORK

The development of settlements in urban areas can not be separated from the rapid rate of population growth either due to natural population growth factors or the process of urbanization. The population growth and limited land in urban areas led to the development of small row houses that are sold and rented to the outsiders. The houses in small plots were then developed into a dense and slum area called a slum area (Gusmaini, 2010).

As the largest city in Indonesia, Jakarta is also not free from the problem of slum settlement. The locations of slum settlement that tend to spread make it difficult to manage, so almost every administrative town in Jakarta has a slum. Data for 2000 mention slum areas in Indonesia reached an area of 47 thousand hectares and increased to 57 thousand hectares in 2009. According to the BPS 2008, there were 26.9 million housing units in Indonesia which were unfit to stay, either the semi-permanent or permanent ones. The number of the homes that were not served by clean water was as many as 9.7 million while the homes that did not get any electricity as many as 3.9 million units and which were not provided any toilets/latrines as many as 10.5 million units (Fahmiarto, 2010). According to Lall *et al.* (2008), in most developing country cities, residents live in slums have poor-quality dwellings and limited access to basic public services and amenities.

Most slum settlements occupy a marginal land, which does not grow at all, whose condition was wild and under the proper standard (Malau, 2006). Office of City Planning (1997) in Jakarta defines slums as densely-inhabited settlements, where their socio-economic conditions are generally low, the areas are very dense because of many houses built there and the house size is below standard, environmental infrastructure is barely available, or does not meet the technical and

health requirements, the houses are generally built on state land or property of others, grow unplanned and are generally located at strategic locations in urban centers.

In many developing countries, including Indonesia a slum is also a center of health problems because the conditions are not hygienic. Prominent features of slums located in a narrow alley, is a high density of the building, indicated by the distance between buildings that are relatively close (*adjacent and opposite*) with the construction of permanent buildings. The impacts of a high-density building are the condition of ventilation becomes worse due to lack of air circulation, its drainage becomes narrow and shallow because of limited land, as a result of the settlement during the rainy season is very potential for experiencing flood; the poorly-designed layout and narrow streets lead to circulation movement to be undirected, as well as the environmental sanitation (*waste and wastewater*) becomes poor (*Suparlan, 1984*).

The most frequent diagnoses were consequently virosis, acute respiratory infections, and bronchitis of people in slums as showed by study in Nairobi, Kenya (Gulis *et al.* 2004). In one study, among 262 children <5 years of age, 95 subjects (36%) were colonized with *Streptococcus pneumonia* (Reis *et al.* 2008).

Health is a fundamental requirement for every person in maintaining and improving quality of life. According to Indonesian Law No. 36 of 2009, the health is good condition, either physically, mentally, spiritually or socially to enable every person to live socially and economically productive. The optimal level of health will be seen from the element of quality of life and the elements that influence it such as mortality and morbidity and nutritional status. The WHO research results in various countries proved that mortality, high morbidity, and frequent epidemics/ outbreaks always occured in places with poor conditions of hygiene and environmental sanitation. The result also proved that with the upgrading of hygiene and environmental sanitation, the mortality/ morbidity and the incidence of outbreaks was reduced by itself (Mulyana, 2008).

Poverty is in fact the root of the problem of nutrition. However, it is becoming worse with a lack of knowledge of nutrition and lack of efforts in applying that knowledge in everyday life (Khomsan *et al., 2009)*. One way to improve health is by consuming food and beverages which are safe and have a balanced nutrition. Safe food in this case is not contaminated food, does not contain microorganisms or bacteria and hazardous chemicals, have been processed by the correct procedures so that the physical and nutritional substances are not broken and do not conflict with public health. Some causes of food safety problem is the use of raw materials and water which are polluted due to the processing and presentation environment that is not clean (dirty air, near the garbage disposal), dirty workers, equipment or containers that are not clean and cross-contamination between foods that have been cooked with raw materials.

Nutritional status is defined as health status produced by a balance between the needs and nutrient intakes. Nutritional status can be used as a measure of success in the fulfillment of nutrition for children as indicated by body weight and height. Harper *et al.*, (1985) states that poverty and malnutrition are important factors in the malnutrition problem. Another important cause of nutritional disturbance is the lack of nutritional knowledge or ability to apply information in daily life. The inappropriate status of nutrition, either less or more, can cause nutritional problems. The problem of nutrition is a public health problem, which is affected by several factors such as food consumption, infectious diseases, the level of family income, family size, mother's education level, level of mother's knowledge about nutrition, health care, cultural abstinence from food, and parenting (Sutiari & Widarsa, 2010).

Coping strategy can be interpreted as an effort made by someone in the situation/ circumstances that are not profitable. In situations / circumstances such as this one can seek to rely on intellectual ability, physical, biological or material ability. This strategy is also usually done

to utilize the medium of exchange in order to improve the ability in getting the food to ensure the perpetuity of oneself and the members of the household (Sen, 1982).

Low income households in slums cause access to food decrease, and inevitably result in changes in consumption patterns. Changes in consumption patterns are the mechanism that is often adopted by the poor to overcome difficulties to meet their food needs. However, if the changes are pushed to the insufficiency of food consumed to live healthy and productive, this will have an impact on the emergence of food insecurity that give further consequences on the decline in nutritional status and household health, especially for vulnerable age groups (*Purlika, 2004).* According to Tabor (2000), poor households will not have the purchasing power that will be used to ensure the household food security. At the time of experiencing the threat of food security, the nutritional status of groups vurnerable to food lack will be disrupted. Chakraborty *et al.* (2009) found that 45.7% among adults in West Bengal, India had low bodyweight. While, Izutsu (2006) found problem of malnutrition among adolescents in Dhaka, Bangladesh. Forms of mechanism to overcome the food unavailability will vary from one household to another depending on demographic and socioeconomic factors, and problems faced by households.
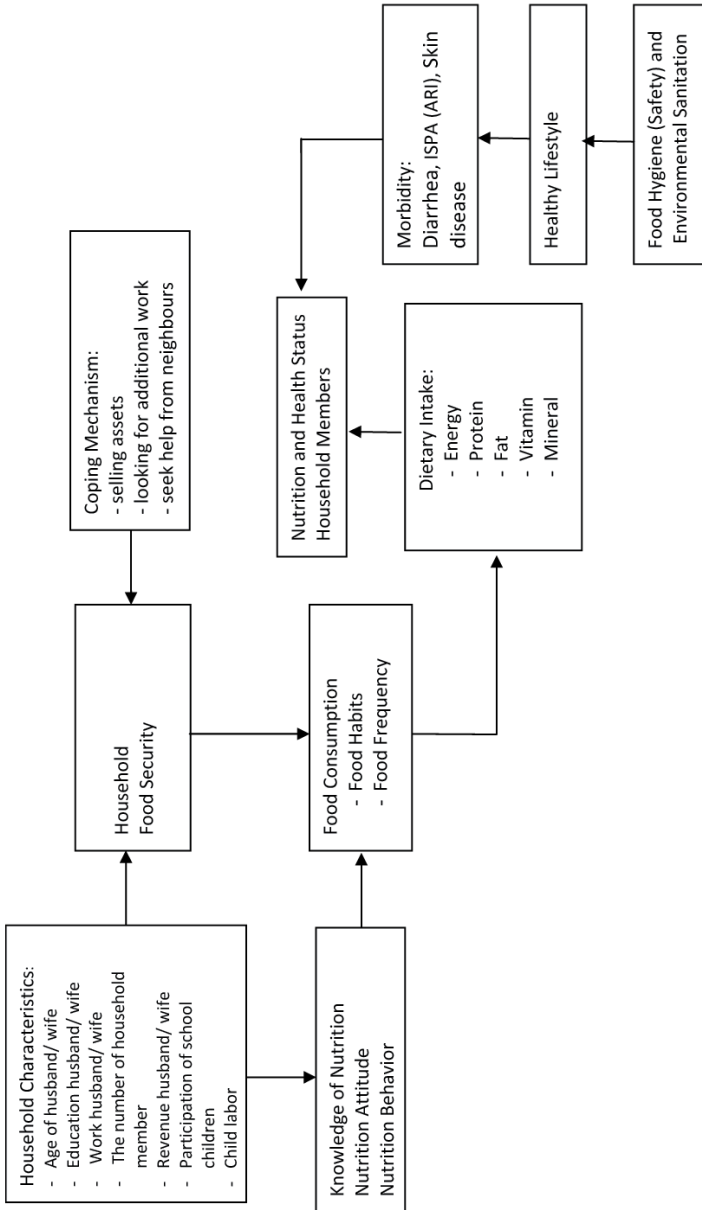
Figure 3.1. Conceptual framework

4. METHOD

4.1. Research Design, Location and Time

This research is of a retrospective and cross sectional design. The retrospective design is intended to collect the data of income, expense, food consumption, and morbidity. The food consumption was identified by recalling the frequency of food consumption in the past. This food frequency recall indicate the people's habit of food consumption. Data of income, expense, food consumption, and morbidity was collected by referring to the previous specific time frame. The time frame was formulated in the questionnaires. The time frame for data of income and expense is the last previous month; food consumption (collected by food habits/food frequency questionnaires) is the last previous year because some foods are consumed very rarely such as beef, milk, lamb etc. ; the time frame for daily food consumption is the last previous 24 hours; and the time frame for morbidity is the last two weeks. The cross-sectional design is meant to collect data on education, household ownership, asset, hygiene, food safety, enviromental sanitation and coping mechanism for food insecurity, the anthropometric data of household members, knowledge, attitude and practice of nutrition, and morbidity. This is done by recording and measuring variables during the enumerators' visits to sample households.

Anthropological research was also be carried out by undertaking observation and participation and case studies in some selected households in slum areas, the areas near station (along the *rail way*), and the area along the riverbank, in order to obtain a detailed picture of the real facts from different parts. We need to know (1) not only what people say they do but also what they actually do in terms of hygiene-related practices, and (2) the hygiene-related facilities in the area (or the lack of them) have to be described.

These observations and case studies will present a realistic picture of the local inhabitant's relevant concepts, perceptions, institutions, and values which used in their life as well as of the ways in which these interrelate. It is not pretended, however, that these case studies will be a representative sample from which reliable quantitative data can be obtained concerning all the inhabitants in the slum areas. Nevertheless, in order to answer the research questions formulated above, facts and figures, which are representative of these slum areas, are needed. Most of these data are collected by means of comprehensive survey carried out by skilled enumerators. The anthropological team gratefully use these facts and figures. It is expected that the case studies and observation add relevant information to data obtained through the survey. In this way, the reliability of part of the survey may be checked and the interpretation of their results be facilitated.

The research was onducted in slum areas of Jakarta and last for 12 months, starting from preparation to writing a final research report.

4.2. Sampling

The population in this research refers to the households who are in the slum areas along the rail way in Senen Sub-District and along the riverbank in Tebet Sub-District, Jakarta, Indonesia. Stratified Random Sampling was applied in this research where the slum areas (slum areas along the *rail way* and along the riverbank) stand as stratum and households stand as sampling unit. In every slum area (stratum), n_i household was selected through Simple Random Sampling Without Replacement (SRSWOR).

The size n was derived through simple random sampling by the following formula (Cochran, 1982):

$$n = \frac{n_0}{1 + \frac{n_0 - 1}{N}}$$

where:

n   = sample size

N   = size of the household population

n_0 $= \dfrac{s^2 t_\alpha^2 (v)}{d^2}$

s^2 = variance of incomes of the households (Rp/capita/month)

$t_{\alpha/2}(v)$ = value of t-student random variable, so that

              $P(|t| > t_{\alpha/2}(v)) = \alpha$;   v= degree of freedom of t

d   = accuracy between the average parameters and sample of income of the households in slum areas,
              so that $|\bar{x} - \mu| < d$

$\bar{x}$ = average income of sample of the households in the slum areas

μ   = average income of population of the households in the slum areas

From the study by Patriasih *et al.* (2009) it is found that the standard deviation for the income of households who have street children in Bandung, West Java is Rp 103 244,-/capita/month. In this case it is assumed that the income of the households in slum areas approaches the income of the households of the street children so that s in the above formula will be close to s=103 244,-. The accuracy value is set at d=103700,- (the maximum difference between the average income of samples and population), with the probability of

95 % or P($|\bar{x}-\mu|<d$)=1-α=0.95 or α=0.05. With v assumed to be big, then $t_{0.025}(v)$=1.96. With an assumption that the population size of households in slum area is big or N=~, so n can be calculated as follows:

$$n_0 = \frac{103244^2 \, x1.96^2}{11700^2} = 299.137 \approx 300$$

$$n_s = n_0 = 300$$

Sample allocation is presented in Table 4.1 below.

Table 4.1. Sample allocation by research location

i^{th} Stratum	Location (Stratum)	Stratum Size (N_i)	Sample Size (n_i)
1	Along rail way in Senen Sub-District	339	141
2	Along the riverbank in Tebet Sub-District	423	159
Total		**762**	**300**

With the sample size n=300, it can mean that the maximum difference between the average income of the sample (from households) and of its population is Rp 11700 with the probability of 95 %. This is based on the assumption that sampling is made by a simple random technique without replacement.

4.3. Data Collection

Data to be collected consist of primary and secondary data. The primary data include:

1. Data on social aspects (formal education, occupation, household ownership, asset)

2. Data on income and expenditure

3. Data on food consumption (food frequency, food habits, and food recall)

4. Hygiene, food safety and environmental sanitation
5. Healthy life styles
6. Anthropometric data
7. Morbidity
8. Knowledge, attitude, practice of nutrition
9. Coping mechanism for food insecurity

The methods of measurement and collection for primary data are listed in Table1 below. The secondary data are the information related to population, sanitation, garbage disposal, water sources in the slum area. The data was collected by five enumerators. They are student in their eighth semester and graduates in the related fields. They were selected through interviews. Before collecting data, the enumerators are trained and informed of the research materials that include objectives, scope, methods of filling in questionnaires and interview techniques.

Table 4.2. Methods of measurement and collection of primary data

Aspects	Variables	Methods of Measurement	Methods of Collection
Social	Name Sex Age Adress Occupation Education Household member Assets	Recording	Interview using questionnaire
Economy	Income Expenditure Food Non-food	Recording	Interview using questionnaire
School age children's participation	Education Working	Recording	Interview and observation using questionnaire

Table 4.2. Methods of measurement and collection of primary data (Continued)

Aspects	Variables	Methods of Measurement	Methods of Collection
Food Consumption	Type and quantity of food consumed	2 x 24 hours recall and food frequency	Interview using questionnaire
Hygiene , food safety and environmental sanitation	Physical Biological Chemical	Recording, observation, laboratory examination (E. Coli, salmonella, heavy metal) on water /foods	Collecting food and water samples
Healthy-life behavior	Use of clean water disposal of waste environmental cleanliness availability of bath, washing equipment, toilets/latrines	Recording	Interview using questionnaire
Nutritional status: Antropometric	Body Weight Body Height	Weight scale Microtoice	Direct measurement
Morbidity	Frequency and length of: Diarrhea ISPA Skin diseases	Recording	Interview using questionnaire
Nutrition Aspects	Knowledge Attitude Practice	Recording	Interview using questionnaire
Coping Mechanism	Ways of solving food insecurity at the household level	Recording	Interview using questionnaire

The data were collected by using questionnaires. For this purpose, a questionnaire was designed and tried out first before use. The feedback from the try-out was used to improve the questionnaire as to make it more operational.

After the data were collected, they were directly checked. For incomplete or incorrect data, the enumerators had to have them completed or corrected. The researchers as the supervisors were responsible for the task.

4.4. Data Analysis and Management

The preparation before the data entry involved coding variables and creating the structure of files. The data were checked first for editing before the entry. The file structure was arranged by using Microsoft excel. The data were put into a file structure, and then they were edited by comparing them with the data in the questionnaire. For any difference , the data were edited or corrected.

After the data in the file were edited, the next steps were generating variables, merging sheets, sorting and merging files as needed so that the data were ready for an analysis. Elementary statistics such as mean, standard deviation, minimum, maximum and proportion were estimated and presented in the forms of tables and diagrams.

4.5. Research Limitations

Some data were collected by a recalling technique, which could be a weakness of this study because the respondents' remembering ability may be very limited to recall all things. However, this method is the most practically-administered one in an on-field survey.

4.6. Relevance Of Research

Slum areas is a neglected part of urban development. This is indicated by social demographic conditions in slum areas such as high population density, environmental conditions which are not suitable for habitation and do not meet the requirements, lack of educational, health facilities, and of socio-cultural infrastructure. The growth of slums occurred because urbanization cannot be stopped.

Settlement will not stop as the source of the problem in the history of human life. The more expanding slum areas in a region, especially in Jakarta, exacerbate a number of problems faced by the people living in these locations and the local government. Unfit dwellings such as houses that are too crowded, the buildings which are not permanent, limited clean water, and dirty environment are the causes of high risk of contracting various diseases such as diarrhea, upper respiratory tract infections (*ARI*), and skin diseases. The results of a research conducted in the slum area in Bali showed 80% admitted not having any latrines and defecating in a river.

A poor health status coupled with the low purchasing power of food due to poverty further aggravates the condition of the nutritional status of families, particularly vulnerable groups such as infants, toddlers and pregnant women. Riskesdas data (2010) showed that about 35% of children were stunted and 17% were malnourished.

Another impact of poverty in the slum area is the low participation rate of children to attend school and the high participation of children to work, eventhough the government has launched a policy of compulsory education of 9 years or until junior high school level. The data show that the number of primary school age children which were accommodated in the formal and non-formal education only reached about 98% of the total number of primary school age children in Indonesia (Lynck, 2007). The remaining 2% until now has not been served in formal and non formal schools, which mostly occurred in remote areas. In Indonesia, the rate of primary school dropouts and children who have

not received any education services is about 5.7 million people from a total population of primary school age who numbered about 45 million people (Prawoto, 2000). This figure is expected to continue to grow in the coming years. It was estimated that by 2010 the number of primary school age children, as many as 55 million, bringing the total number of school dropouts and those who are not served education will increase as well. On the island of Java itself, especially in urban areas and poverty pockets of the suburbs or slums in large cities, the rate of primary school age children's participation is still low

5. SOCIAL MAPS OF THE RESEARCH AREAS

5.1. Research Areas

Province DKI Jakarta is the capital city of Indonesia, which is located in 6^0 12' South Latitude and 106^0 48' East Longitude. This area is a lowland of 7-meter height above the sea level. DKI Jakarta is divided into five areas of administrative cities and one administrative regency, namely, Administrative Cities of Jakarta Pusat with the size of 47.90 km², Jakarta Utara with the size of 142.20 km², Jakarta Barat with the size of 126.15 km², Jakarta Selatan with the size of 145.73 km², and Jakarta Timur with the size of 187.73 km², as well as Administrative Regency Kepulauan Seribu with the size of 11.81 km². In the north side spreads a beach of 35 km long, where 13 rivers and 2 canals empty into. The south and east sides border on Depok City, Bogor Regency, Bekasi City dan Bekasi Regency, the west side borders on Tangerang City and Tangerang Regency, and the north side borders on Laut Jawa (Java Sea).

Figure 5.1. Map of DKI Jakarta

The number of people of Jakarta Province in the year 2011 was 9,729,500 with the growth rate of 1.7% and the density was 13,325 people/km^2. Based on a survey of RW *Kumuh* (Slum RW) in 2011, there were 392 slum RWs in Province DKI Jakarta consisting of: 11 severely slum RWs, 85 moderately slum RWs, and 153 slightly slum RWs. The management of slum areas was one of the main programs proposed by the government of Province DKI Jakarta.

The slum areas along the Ciliwung riverbank were in Sub-district Matraman and Sub- district Tebet in Manggarai area, Jakarta Timur. The slum areas along the railway were in Sub-district Senen in Kramat Sentiong area in Jakarta Pusat. Both of the slum areas were very densely-populated areas.

5.2. Life of the Slum People

From a glance description we could say that both areas under study, either the area along the railway side or the area along the riverbank belonged to the poor areas. In general the poverty patterns of both areas were relatively the same. A slight difference which could be observed was that the area in the railway side seemed to be poorer than that in the riverbank.

Poverty as stated by Suparlan (1994) is a condition of being lack of wealth or precious things suffered by one or a group of people. The consequence of being lack of wealth or the precious things is that one or a group of people feel unable to finance the life necessity as it should be. The inability was found not only at the level of cultural needs (tradition, ceremonies, moral and ethics), or at the level of the fulfillment of social needs (education, communication and interaction with fellows, but also at the level of fulfilling their basic needs, such as, food, drink, clothes, housing, health, etc.

At the community level, physical poverty was described by houses and settlement which were slum, small-sized, dense and clustered, sanitary facilities which were inadequate, and the low level of organization outside the nuclear family and the extended family. Besides that, the people in the slum areas were ineffective in taking participation and integrating themselves in the community institutions that this leads to being afraid, high suspicion, apathies, and disintegration.

At the family level poverty was indicated by a short childhood and a lack of parental nursing, earlier being adult, uncertain means of livelihood with low incomes, straddle work (working on any kinds of jobs which were uncertain and with low wages). At the individual

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level, poverty was indicated by outstanding characteristics, such as, low education, strongly feeling useless, being unable, high dependence and feeling inferior.

Poverty experienced by the people was built in and affected almost all of their life aspects. Poverty suffered by a group of persons, even by a community, resulted in a condition where the member of the community in question felt that they were not poor if they were in and lived among them, and it was felt as something usual in their daily life. In such condition there was no feeling of being different among them, which might arouse a feeling of being ashamed. In this condition, poverty was represented in various ways to fulfill their needs in order to live.

6.1. Characteristics of Socio-demography

A slum settlement is a settlement which is densely-populated, whose socio-economic condition is generally low, in which a number of houses are jammed together, and whose size is under standard. Few environmental infrastructures existed in a slum settlement or did not meet technical and health requirements, were commonly built in the lands owned by the government or others, grew unplanned and generally existed in a strategic location in the city centers (Dinas Tata Kota--Department of City Management DKI Jakarta 1997).

The causes of a slum settlement emergence were a high growth of the city, which was not accompanied by an adequate income rate and the slowness of the city government in planning and building the infrastructure, especially roads, in a growing area of a new settlement. In line with the increasing demand of housing, the people independently split the land and build a settlement without an adequate site plan. As a result, the shape and layout of land lots were not in order and not completed with a basic infrastructure of a settlement (Sadyohutomo, 2008).

Based on Table 6.1, in general, the sizes of the respondents' households are varied enough, starting from small to big households. Almost half (40.9%) of the respondents' households staying in the railway side were big households. Whereas, the respondents living in the riverbank belonged to small households (39.4%). This could indicate that the railway side was prefferred to be used a place for them to stay and also could be used as a place to run a business; while the location in the riverbank was less interesting because the access to business was likely small.

Table 6.1. Distribution of the respondents by the household size

Variables	Railway side (n=141)		Riverbank (n= 159)		Total (n=300)	
	n	%	n	%	n	%
Small (< 4 persons)	36	25.2	63	39.4	99	32.8
Medium (4-6 persons)	35	24.8	47	29.8	86	28.8
Big (6-10 persons)	58	40.9	46	28.8	104	34.6
Very Big (>10 persons)	13	9.1	3	2.1	11	3.8
Total	141	100.0	159	100.0	300	100.0

Based on Table 6.2, the ages of husband and wives, either those who stayed in the railway side or in the riverbank were not so different, that is, between 44 and 46 years for the husbands, and 42 to 43 years for the wives. The youngest age of the husband was 20, for both who lived in the railway side and in the riverbank, while the oldest age of the husband was 70 years in the railway side and 85 years in the riverbank. The youngest age of the wives, both who lived in the railway side and in the riverbank was 20 years, whereas the oldest age of the wife who lived in the railway side was 87 years and that of who lived in the riverbank was 76 years. Thus, on average, the ages of the husbands and the wives both who lived in the railway side and of those who lived in the riverbank were categorized as productive ages. This could influence the fulfillment of nutrition for the members of their households.

Table 6.2. Social characteristics of the household members

Variables	Railway side (n=141)	Riverbank (n=159)	Total (n=300)
Age (years)			
- Husbands	43.6 ± 12.6	45.6 ± 11.6	44.7 ± 12.1
- Wives	42.1 ± 12.7	42.8 ± 12.1	42.5 ± 12.4
Length of Education (years)			
- Husbands	8.8 ± 3.5	8.3 ± 3.9	8.5 ± 3.7
- Wives	7.3 ± 3.5	6.9 ± 4.3	7.1 ± 3.9
Total household members per house	5.8 ± 2.7	4.7 ± 2.6	5.2 ± 2.7

Education 0f the husbands was generally higher than the wives (8.5 years vs 7.1 years), but their education level was in fact still low (not completed Junior High School). Those who stayed in the railway side or those who stayed in the riverbank had almost equal education levels. The low education level was closely related with the prosperity of the people. Those who held a high education had an opportunity to get a better job.

Based on the number of the household members, the density level of those who lived in the railway side was higher (on average 5.8 persons) than that of those in the riverbank (on average 4.7 person). The result of a survey in the slum RWs in Province Jakarta in 2011 showed that the housing in the railway side where the respondents lived in was categorized as moderately to severely slum, while that in the riverbank (Manggarai, Tebet) belonged to the slightly to moderately slum category. The determination for the criteria of these slum areas were based on ten variables, that is, population density, building layout, construction condition, building for staying, housing ventilation, building density, road condition, drainage, the people's use of clean water, human waste disposal, and rubbish/waste management (BPS, 2012).

Table 6.3 shows that the majority of husbands worked as laborers, either those who stayed in the railway side or those who stayed in the riverbank, that is, as much as 33.1% and 26.4%, respectively. Those who worked in the service field were as much as 22.9% from the railway side and 23.6% from the riverbank. However, there were also husbands who did not have any jobs, that is, as much as 11.0% in the railway side and 6.4% in the riverbank. The husbands who worked played a significant role in determining the household prosperity, their incomes could be used to meet the nutrition of their households. The result of a study by Chakraborty *et al.* (2008) showed that the household income was positively correlated with the nutritional status of the adult men who lived in the slum areas in India.

Table 6.3. Distribution of the husbands by types of jobs

Jobs	Railway side (n=141)		Riverbank (n=159)		Total (n=300)	
	n	%	n	%	n	%
Jobless	13	11.0	9	6.4	22	8.5
Seller	20	16.9	33	23.6	53	20.5
Laborer	39	33.1	37	26.4	76	29.5
Litter Scrapper	1	0.8	2	1.4	3	1.2
Beggar	1	0.8	0	0.0	1	0.4
Street musician	5	4.2	0	0.0	5	1.9
Service provider	27	22.9	33	23.6	60	23.3
Government officer/military/ Police	0	0.0	3	2.1	3	1.2
Employee	10	8.5	17	12.1	27	10.5
Others	2	1.7	6	4.3	8	3.1

Some means of living which are mostly done in the slum areas by the riverbank were jobs which did not require any skills of education. Jobs which could be obtained by those with a low education influenced the amount of incomes they could get. Many people from the slum areas had to work on any straddle jobs (doing anything they could find

as far as it could make money). The jobs which they were used to doing were small sellers, low private employees, litter scrappers, collectors, pedicab riders, drivers, etc.

The patterns of means of living in the slum areas in the railway side were not so different from those found in the slum areas in the riverbank. Straddle jobs and priceless jobs were jobs which were mostly done by the people from the railway side. Relatively high jobs, such *bajaj* drivers, employees, and owners of rooms for renting were means of living for a few people in the railway side.

For the people whose means of living were as sellers, what they sold were varied, for example, (1) cooked food sellers, (2) sellers of daily needs in stalls, (3) sellers in street, and (4) mobile sellers. The means of living which was mostly done was sellers in street because this kind of job did not need a big capital, as far as they were clever in selling the goods.

Some people of the riverbank who worked as a private employee were at the lowest level in the manufacturer or office they worked for. Some of them became shopkeepers at the Senen Jaya market or other shops around their area.

The people of the riverbank who worked as litter scrappers can be grouped into two, namely, litter scrappers dragging a cart and those carrying a sack as their working tools. These tools affected to the litters and worn-out articles they collected. The scrappers dragging a cart collected more various litters and worn-out articles, such as plastic drinking bottles/glasses, worn-out electronic gadgets and iron articles, while the scrapper carrying a sack collected limited litters and worn-out articles which were light, such plastics. The scrappers sold what they had collected to the collectors. In addition to the two kinds of scrappers, there were also seasonal scrappers. This kind of scrappers collected worn-out articles from the Ciliwung river when the river water was rising or flooding by using a net or a scoop. According to this kind of scrappers, their work became easier and gave more results because when the water rose or flooded, they could collect more litters

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carried by the river flow than their collection from streets. Moreover, the Ciliwung river belonged to a very dirty river full of rubbish so it often flooded. Plastic litters were usually sold to the collectors, while the wooden articles were not sold but used by themselves as firewood.

Collectors are those who receive the worn-out articles collected by the scrappers. In the riverbank there were collectors of worn-out plastics, collectors of worn-out newspaper or paper, and collectors or worn-out iron articles. The prices of plastic litters were varied from IDR 1000 to IDR 5000 per kg. The people as collectors were those who were relatively able economically because becoming collectors needed more capital to buy the worn-out articles from the collectors.

A job as pedicab drivers were mostly taken by outsiders from Jawa Tengah, Jawa Timur and Kuningan Jawa Barat. The number of the people working as pedicab drivers decreased due to the prohibition of pedicabs in DKI Jakarta. Some of the pedicab drivers then changed their means of living to be scrappers, and some others to be mobile sellers or street sellers.

Several other means of living taken by a small number of the people in the riverbank were bajaj drivers, owners of rooms for renting, and street musicians in streets or bus stations. The people were accustomed to being in such a minimal economic condition. They had their own way to overcome their economic problems. There were households members who worked on more than three different kinds of straddled work in a day with an income which was not so significant to provide sustenance for their family.

Table 6.4. Distribution of wives by types of jobs

Jobs	Railway side (n=141)		Riverbank (n=150)		Total (n=291)	
	n	%	n	%	n	%
No job (housewives)	78	55.3	95	63.3	173	59.5
Seller	32	22.7	28	18.7	60	20.6
Laborer	16	11.3	11	7.3	27	9.3
Seller	0	0.0	2	1.3	2	0.7
Beggar	0	0.0	0	0.0	0	0.0
Street musician	1	0.7	0	0.0	1	0.3
Service provider	8	5.7	11	7.3	19	6.5
Others	4	2.8	1	0.7	5	1.7
Government officer/ military/police	0	0.0	0	0.0	0	0.0
Employee	2	1.4	2	1.3	4	1.4

Most of the respondents' wives, either those staying in the riverbank or in the railway side did not work/were housewives, that is, as much as 63.3% and 55.3% respectively. The wives who worked and also earned money were spread in various jobs, such as, sellers, laborers, service providers, employees, litter scrappers, and others. The wives who worked could increase the family income so their access to food or non-food can increase.

6.2. Economic Characteristics

If viewed from the distribution of the households by house ownership status (Table 6.5), most of them had owned a house, that is, 38% of those who lived in the railway side, and 50.9% of those who lived in the riverbank. Whereas, as much as 34.8% of the households who stayed in the railway side and 22.0% in the riverbank owned a house with a status of renting. Staying together with their parents or staying in houses inheritted by their parents also became a choice of 25.5% households in the railway side and 23.3% of those in the riverbank.

The riverbank, which was as the green area of the river, where the people built the houses in was actually not allowed to stay according to the regulation. Most of the houses in this area (90%) were semi-permanent ones which were made of wooden shelves and wood. The space between the house and the river was close enough, that is, only about 0 – 2 meter from the river, so there were many houses which utilized wood as foundations at the rear parts of their houses. The houses were too close to one another so there was almost no space between one house to another house. The fire became one haunting danger that made the people in this area worried.

Table 6.5. Distribution of the households by house ownership status

Ownership Status	Railway side (n=141)		Riverbank (n=159)		Total (n=300)	
	n	%	n	%	n	%
Self-owned	54	38.3	81	50.9	135	45.0
Rented	49	34.8	35	22.0	84	28.0
Parents	36	25.5	34	21.4	70	23.3
Others	2	1.4	9	5.7	11	3.7
Total	141	100.0	159	100.0	300	100.0

The houses of the people in the slum areas commonly had 2 main rooms, that is, a bedroom and a kitchen. Only a few houses had 3 rooms, that is, added by a simple bathroom. Some of the people usually integrated the functions of the rooms. Their children slept in the same room as their parents due to the limited room. Even, some members of the households had to sleep by taking turn in the same room since their parents had eight children.

The houses existing around the railway side were mostly made of shelves and tarpaulins, and some were semi-permanent houses. The condition of the houses which existed rather far from the railway side was very dense so there were several passageways which could not be

passed, even by two-cycle vehicle. The playing grounds for children were very poor, so that several children played by the railway tracks. This threatened their safety.

Relatively many houses were built in the dangerous zones, that is, around the railway side which were very close to the railway crossing. Actually those zones are not allowed to reside. The houses existing around the railway side were mostly made of shelves and tarpaulins; however, there were some houses which were semi-permanent. The condition of the houses which existed rather far from the railway side was very dense so there were several passageways which could not be passed, even by two-cycle vehicle.

The public facilities, such as, mosques, praying houses, health facilities (the public health centers—*puskesmas*) were available in the riverbank and in the railway side which were the c-locations of this study. At present the public health centers have evenly been spread to make the people easier to get an access to the health service.

A high variety of the slum settlement could be seen from the house size, land width, and the number of the bedrooms owned by the people there. The different house size of the respondents staying in the railway side and that of those in the riverbank was not so striking. The average sizes of the houses owned by the respondents the railway side and in the riverbank were 30.8 m² and 33.4 m² respectively. Thus, it could be said that those who stayed in a small-sized house were actually not in accordance with a feasible settlement.

Table 6.6. House size, land width, and the number of bedrooms

Assetts	Railway side (n=141)	Riverbank (n=159)	Total (n=300)
House size (m²)			
- Mean	30.8	33.4	32.2
- Std	45.0	26.3	36.2
Land width (m²)			
- Mean	29.6	26.1	27.8
- Std	58.5	23.7	43.6
The number of bedrooms			
- Mean	1.4	1.2	1.3
- Std	1.7	1.5	1.6

The widths of the land the respondents dwelt in were varied. There were households who stayed in the second floors, while some others stayed in the first floors. On average the width of the land the respondents dewlt in the railway side was a bit wider (29.6 m²) compared to that in the riverbank (26.1 m²). This showed how narrow the land they stayed in was so this could affected the environment, both in the health side and in the growth as well as the development of their family members.

Both who stayed in the railway side and those in the riverbank did not possess an adequate number of bedrooms, that is, on average only 1.4 and 1.2, respectively. This condition created an unhealthy household environment.

Based on Tabel 6.7, concerning on the availability of windows in the houses, it was known that there were still some houses which did not have any windows, that is, 26.2% in the railway side , and 25.2% in the riverbank. Because of the narrow house, it was understood if many houses only had one or two windows. Ventilations or windows in the house have an important meaning for air circulation. Houses with good air circulation will make the dwellers healtier.

Table 6.7. Distribution of households by house windows owned

Window details	Railway side (n=141)		Riverbank (n= 159)		Total (n=300)	
	n	%	n	%	n	%
House windows						
- No	37	26.2	40	25.2	77	25.7
- present	104	73.8	119	74.8	223	74.3
Number of house windows						
- 1	39	37.5	33	27.7	72	32.3
- 2	30	28.8	45	37.8	75	33.6
- 3	19	18.3	21	17.6	40	17.9
- 4	10	9.6	11	9.2	21	9.4
- 5	3	2.9	3	2.5	6	2.7
- 6	1	1.0	2	1.7	3	1.3
- 8	2	1.9	3	2.5	5	2.2
- 9	0	0.0	1	0.8	1	0.4

Table 6.8 displayed the distribution of the floor types which were applied in the respondents' buildings. In general, the floors which were made of ceramics were as much as 61.7% and 58.5% for the respondents' houses in the railway side and in the riverbank respectively. Whereas, the types of floor whiche were made of cement 29.1% and 25.2% and of wooden shelves/bamboo 3.5% and 13.8% for the respondents' houses in the railway side and in the riverbank respectively. However, of the 300 households in the railway side and in the riverbank investigated, 7.9% and 8.9% had their houses with land floors respectively. This showed that not all of the house parts had been applied with ceramics or cement.

Table 6.8. Distribution of the households by types of their house floor

Types of floor	Railway side (n=141)		Riverbank (n=159)		Total (n=300)	
	n	%	n	%	n	%
Land	3	2.1	3	1.9	6	2.0
Ceramics	87	61.7	93	58.5	180	60.0
Cement	41	29.1	40	25.2	81	27.0
wooden shelves/bamboo	5	3.5	22	13.8	27	9.0
Others	5	3.5	1	0.6	6	2.0
Some parts of the houses in land	11	7.9	14	8.9	25	8.4

The majority (56.0%) of the house roofs of the respondents who stayed in the riverbank were made of zincs; while 41.8% of those in the railway side were made of roof-tile. The roofs the respondents' houses made of asbestos were 32.6% in the railway side , and 21.4% in the riverbank. The rest were made of other types of roof.

Table 6.9. Distribution of the households by types of their house roofs

Types of roofs	Railway side (n=141)		Riverbank (n= 159)		Total (n=300)	
	n	%	n	%	n	%
Zincs	35	24.8	89	56.0	124	41.3
Roof-tile	59	41.8	30	18.9	89	29.7
Asbestos	46	32.6	34	21.4	80	26.7
Others	1	0.7	6	3.8	7	2.3

The distribution of the non-ellectronic assetts of the households can be seen in Table 6.10. Based on the table, it can be explained that on average the respondents possessed golden jewellery as much as 3.2 g in the railway side and 2.4 g in the riverbank. Gold was a jewellery which was owned as a stock which could be sold or mortgaged when the households were in urgent economic need. Thus, it could be said that some of the respondents had owned a saving in a form of gold as a stock when they faced economic difficulties in their household. Other assetts which were owned were wardrobes (mostly owned by the respondents compared to other things), bed, gas stoves, etc. Many of the households in the sites of this research had gas stoves because they got from the government who distributed the stoves for free.

Table 6.10. Distribution of non-electronic assets in the households

Assetts	Railway side (n=141)		Riverbank (n=159)		Total (n=300)	
	Mean	Std	Mean	Std	Mean	Std
Chairs for guests (set)	0.1	0.3	0.2	0.5	0.2	0.4
Dining table (set)	0.1	0.3	0.1	0.3	0.1	0.3
Bed (unit)	0.7	0.9	0.5	1.0	0.6	1.0
Wardrobe (unit)	2.0	1.3	2.0	1.3	2.0	1.3
Other houses/land (unit)	0.1	0.4	0.2	0.6	0.2	0.5
Golden jewellery (g)	3.2	10.9	2.4	8.1	2.8	9.5
Gas stove (unit)	0.7	0.5	0.8	0.5	0.8	0.5

Table 6.11 presents the distribution of electronic gadgets owned by each of the households. Ownership of electronic gadgets might be used to see the prosperity level of the households. Based on the table, on average the number of handphones owned by each household in the railway side was, 1.8 unit, and 2.2 units in the riverbank. Televisions and fans were things which were owned by almost all of the households. The televisions could become the main medium of entertainment, while the fans were needed to overcome the hot weather in Jakarta.

Table 6.11. Distribution of the numbers of electronic gadgets owned by the households

Assetts	Railway side (n=141)		Riverbank (n=159)		Total (n=300)	
	Mean	Std	Mean	Std	Mean	Std
Fan (unit)	1.6	0.9	1.6	1.0	1.6	1.0
Television (set)	1.1	0.6	1.2	0.7	1.1	0.7
Video/DVD (set)	0.6	0.7	0.7	0.7	0.7	0.7
Radio/Tape (set)	0.1	0.4	0.3	0.6	0.2	0.5
AC (unit)	0.0	0.1	0.0	0.1	0.0	0.1
Telephone/HP (unit)	1.8	1.3	2.2	1.6	2.0	1.5
Motorcycle (unit)	0.6	0.7	0.8	0.8	0.7	0.7
Bicycle (unit)	0.4	0.6	0.5	0.7	0.5	0.7
Refrigerator (unit)	0.4	0.5	0.6	0.7	0.5	0.6
Computer/Laptop (unit)	0.1	0.3	0.2	0.4	0.1	0.4
Camera (unit)	0.0	0.2	0.1	0.3	0.1	0.3

The poverty line in Province DKI Jakarta in 2011 was IDR 355,480/capita/month and the poverty line of the World Bank was US$2/capita/day or approximately IDR 540,000/capita/month. If compared to the average income of the respondents' households (see Table 6.12) in the railway side, IDR 654,690/capita/month and in the riverbank, IDR 745,136/capita/month, their income was above the standard, and accordingly the households of the respondents could not be said poor.

Based on Table 6.12, it is observed that the non-food expenditure was higher than the food expenditure for both the respondents who lived in the railway side and in the riverbank. The households in the riverbank had a slightly higher income than their expenditure, so they could at least spare some of their money for saving or a stock of their urgent needs. If it is viewed from the total income, those who lived in the riverbank had a slightly higher income than those in the railway side.

Table 6.12. Statistics of household incomes and expenditures

Economic Status	Railway side (n=141)	Riverbank (n=159)	Total (n=300)
Income (IDR/cap/month)	654 690 ± 559 366	745 136 ± 564 401	702 627 ± 562 920
Expenditure (IDR/cap/month)			
a. Food	345 463 ± 166 551	359 492 ± 168 326	352 923 ± 167 364
b. Non-food	418 552 ± 445 222	404 321 ± 340 209	410 985 ± 392 271

Details of food and non-food expenditures of the respondents' households can be seen in Table 6.13. This table provides a description of the respondents' household expendtiture in Rupiah/capita/month. The household expenditure in percentages can be seen in Table 6.14.

Table 6.13. The average expenditure of the households (IDR/capita/month)

Expenditure	Railway side (n=141)	Riverbank (n=159)	Total (n=300)
Food expenditure			
- Rice	50 667	48 681	49 615
- Side dishes	81 354	102 854	92 745
- Vegetables and fruits	36 147	43 674	40 135
- Frying oil	14 499	13 433	13 934
- Drinks (milk. coffee. Tea)	37 168	40 313	38 834
- Others (Cooking Spices)	31 101	27 012	28 935
- Snacks	56 432	43 365	49 509
- Processed food (Wrapped rice)	22 332	25 360	23 936
- Drinking/cooking water	10 896	12 552	11 774
Non-food expenditure			
- Health/sanitation	34 530	26 388	30 216
- Education	56 526	64 171	60 576
- Clothes	14 302	15 496	14 934
- Fuel	56 878	66 563	62 009
- Cigarrettes	50 494	62 953	57 095
- Others	199 928	166 224	182 071

Table 6.13 provides the details of food and non-food expenditure to illustrate the prosperity level of the households which was assessed by the percentage of the household expenditure. The biggest expenditure was on side dishes, then rice and snacks. The expenditure on the side dishes for the people in the riverbank was bigger that that of the people in the railway side , that is, 14.4% and 11.6% respectively. The second biggest expenditure was on rice and snacks, that is, 7.7% and 7.7% respectively for those who lived in the railway side , and 7.5% and 5.7% for those living in the riverbank. Other expenditure which was big enough was to buy vegetables and fruits, as well as drinks, such as, milk, coffee, tea; whereas the lowest expenditure in the respondents' households was for the drinking/cooking water, frying oil and processed food, such as, wrapped rice, and others, such as, cooking spices.

Table 6.14 also gives details of non-food expenditure. In the table, which is meant by others is transportation fees, renting house payment, payment of debt installment, water, phone pulses, recreation, and saving/payment in a monthly social gathering. The expenditure on others was slightly higher for those who lived in the railway side than for those who lived in the riverbank, that is, 19.7% and 18.6%. The expenditure on fuel was relatively big (8.5%), as it was also for cigarrettes (7.8%), and education (7.8%). The lowest expenditure was for clothes (2.0%). The majority of the households bought clothes by the time of *lebaran*, which is a great/holy day for moslems.

Table 6.14. Percentages of the household expenditure

Expenditure	Railway side (n=141)	Riverbank (n=159)	Total (n=300)
Food expenditure	**50.2**	**50.4**	**50.3**
- Rice	7.7	7.5	7.6
- Side dishes	11.6	14.4	13.1
- Fruits and vegetables	5.3	6.1	5.7
- Frying oils	2.2	1.9	2.1
- Drinks (milk, coffee, tea)	5.9	5.9	5.9
- Others (Cooking spices)	4.9	4.3	4.6
- Snacks	7.7	5.7	6.7
- Processed food (wrapped rice)	3.1	3.0	3.0
- Cooking/drinking water	1.8	1.7	1.7
Non-food expenditure	**49.8**	**49.6**	**49.7**
- Health/Sanitation	4.7	4.2	4.4
- Education	7.7	7.8	7.8
- Clothes	2.0	2.0	2.0
- Fuels	8.2	8.9	8.5
- Cigarrettes	7.6	8.0	7.8
- Others	19.7	18.6	19.1

7. EDUCATION PARTICIPATION

The low education is still a problem for the Indonesian people. Problems of dropouts were often found in the location of this research. Awareness of the importance of education might be still low although the government has established education free of charge from the basic level to the high level. The drop-out children then helped their parents to the household work or worked to earn some money. Many of the households in the railway side or in the riverbank came from outside Jakarta. They came to Jakarta without enough education, so when they then developed a household and had children, they still did not pay attention to education for their children.

Nine-year schooling compulsory for children in the railway side needed more serious attention from the government since 22.6% of the 7-to-15-year children did not go to school anymore, as this can be seen in Table 7.1. Whereas, in the riverbank the condition was better since those who did not go to school were only 2.7 %. Children of 16-to-18- year- old who did not go to school were very high, above 50% on average, 52.9% in the railway side , and 52.5% in the riverbank. The result of the research conducted by Mugisha (2006) in Kenya showed that the school participation among children ranging from 9 to 11 years old was high enough, however, in line with the increasingly older ages the school participation figure decreased.

Table 7.1. Distribution of school-aged children by educational status

Educational Status	Railway side		Riverbank		Total	
	n	%	n	%	n	%
7 to 15 years old						
- Going to school	96	77.4	110	97.3	206	86.9
- Not going to school	28	22.6	3	2.7	31	13.1
16 to 18 years old						
- Going to school	16	47.1	19	47.5	35	47.3
- Not going to school	18	52.9	21	52.5	39	52.7

The low education of the people was a big problem for the households in the slum settlement. Dropout and not continuing study to higher school for the school-aged children indicated the low educational status of the people in the settlement. The education level of the parents was as low as the education level of their children. The children who did not go to school anymore then worked with whatever skill they had to help their parents support the household economy.

The 7-to-15-year-old children who were dropped out commonly did not work, this was rather different from the 16-to-18-year-old ones. In the riverbank there were no 7-to-15-year-old children who worked. On the other hand, in the railway side , there were 7-to-15-year-old children who worked as sellers or service provider, that is, as much as 3.6% respectively as it can be seen in Table 7.2. The 16-to-18-year-old children who worked were many, either in the railway side or in the riverbank. The children in this age in the railway side who worked were 27.8%, and those in the riverbank were far higher, that is, 42.9%. In general, they worked as laborers, sellers, service providers, etc.

Table 7.2.   Distribution of the school-aged (7-to-15-year-old) children who did not attend any school by jobs

Jobs	Railway side (n=28)		Riverbank (n=3)		Total (n=31)	
	n	%	n	%	n	%
No job	26	92.8	3	100.0	29	93.6
Sellers	1	3.6	0	0.0	1	3.2
Service providers	1	3.6	0	0.0	1	3.2

Table 7.3.   Distribution of the school-aged (16-to-18-year-old) children who did not attend any school by jobs

Jobs	Railway side (n=28)		Riverbank (n=3)		Total (n=31)	
	n	%	n	%	n	%
No Job	13	72.2	12	57.1	25	64.1
Sellers	0	0.0	1	4.8	1	2.6
Laborers	3	16.7	5	23.8	8	20.5
Service Providers	0	0.0	3	14.3	3	7.7
Housewives	1	5.6	0	0.0	1	2.6
Others	1	5.6	0	0.0	1	2.6

The distances between the house and the school, either in the railway side or in the riverbank were relatively short, around 3 km on average. Even though the distances to the school were relatively the same, the time to reach the school was greatly different. Some of the children went to school on foot, and some others used public transportation. In the railway side the time to reach the school on foot was only about 15 minutes, while in the riverbank it was almost two times of that in the railway side, that is, around 28 minutes. However, the time to reach the school for those using public transportation was relatively the same, that is, around 15 minutes.

Table 7.4. The average distance and time to reach the school

Variable	Railway side	Riverbank	Total
Distance to reach (km)	2.9 ± 3.3	2.9 ± 3.2	2.9 ± 3.2
Time to reach (minute)			
- On foot	15.4 ± 9.5	28.2 ± 101.9	21.5 ± 70.8
- Public transportation	14.8 ± 11.7	15.6 ± 13.5	15.2 ± 12.7

The children commonly went to school on foot. The children in the railway side who went to school on foot were 59.5%, while in the riverbank 50.5%. Other methods to reach the school were by using public transportation and using their own vehicle. Those who used public transportation were approximately 29.1% in the railway side , 21.1% in the riverbank. Whereas, the rest used their own vehicle.

Table 7.5. Distribution of the school-aged children by means of transportation to school

Ways to reach the school	Railway side		Riverbank		Total	
	n	%	n	%	n	%
On foot	47	59.5	48	50.5	95	54.6
Public transportation	23	29.1	20	21.1	43	24.7
self-owned vehicle	9	11.4	27	28.4	36	20.7

8. KNOWLEDGE, ATTITUDE AND BEHAVIOR TOWARDS NUTRITION AND HEALTH

Knowledge of nutrition and health becomes an important basis for the formation of attitude and practice of nutrition and health. The knowledge of nutrition and health may come from a variety of media, such as, magazines, tabloid, television, radio, or from nutritional cadres and medical staff. For the low-income group, if they regularly visited *posyandu* (an integrated service post), information on nutrition and health commonly comes from the *posyandu* cadres or midwives who are on duty in the *posyandu* every month.

The table below showed that in total there were 21.0% of the wives whose nutritional and health knowledge belonged to the category of being. The districtrition of the wives' nutrition and health knowledge according to the category of being good (>80), adequate (60-80), and less (<60) showed that the households who lived in the railway side and the riverbank possessed nutritional and health knowledge which was equal or almost the same. The wives who possessed a good nutritional and health knowledge were 42.6% in the railway side and 40.9% in the riverbank; while those possessing an adequate nutritional and health knowledge were 36.9% the railway side and 37.7% in the riverbank. The average score of the wives' nutritional and health knowledge in the research sites was 70.0 (belonging to the category of being adequate). Thus, even though the households in this research stayed in the slum settlements with a low socio-economic level, they generally possessed a nutritional and health knowledge with a category of being adequate (scores 60 to 80) to of being good (scores >80). The good knowledge of the wives' nutritional and health knowledge could not be separated

from the practicality in getting access to information on nutrition and knowledge from various media which could be gained easily and cheaply.

Table 8.1. Distribution of the wives by scores of nutritional and health knowledge

Category	Railway side (n=141)		Riverbank (n= 159)		Total (n=300)	
	n	%	n	%	n	%
Good (>80)	60	42.6	65	40.9	125	41.7
Adequate (60-80)	52	36.9	60	37.7	112	37.3
Less (<60)	29	20.6	34	21.4	63	21.0
Average score	70.4 ± 16.8		1.6	± 18.1	70.0 ± 17.5	

Even though they lived in the slum settlements, the wives had an easy access to get information on nutrition and health promptly and comprehensively through the cadres or other information media because the slum settlements were in Jakarta (the capital city of Indonesia), where this research was conducted. Sardjunani (2006) mentioned that in regards to child bearing, the wives who were open to the new things (connected with nutrition and health) would understand more the development and nutritional needs of children. This was different from the wives who had a limited access to the information, they tended to have a limited knowledge and understanding on the nutritional need and growth or development of children.

The items for the nutritional and health knowledge instrument were comprised of 10 questions including the understanding on: food as energy sources, food for growth, the importance of calcium, benefits of vegetables and fruits, breast-milk for children, food safety, and the danger of smoking. Below were details of the respondents (wives) who answered correctly a number of questions on the nutritional and health knowledge.

There were some items which were not well understood, that is, the importance of animal food for the growth (the wives who answered correctly were only 49.0%) and protein sources were meat, egg, tofu and soybean cake (53.7%). Growth is a process of the increase of the size and the change of the body shape partly or totally so it can be measured by length and weight units (Supariasa *et al.* 2001). Thus, indicators whether one has a good nutritional status or not can be seen from his/her growth. Animal food is a food that contains the most complete amino-acid which is good for the growth. It is known that the growth and development of muscles will occur if there is enough amino acid which is suitable, including for maintenance and reparation. Thus, the wives' limited knowledge on the animal food for the growth and on food of protein sources resulted in the household members' access to the food of protein sources became limited so their growth was inhibited. In line with the condition just explained, Sajogyo (1994) stated that the wives' nutritional knowledge would indirectly affect the nutritional status. This is because the knowledge owned by the wives will be used as knowledge in nursing, looking after and fulfilling the nutrition of the children so the condition of the child nutrition is more guaranteed.

In addition to foods of protein sources and the roles of animal foods for the growth, several items of the nutritional knowledge was not well understood, that is: milk and green vegetables are sources of calcium to strengthen the bones (55.0%), as well as liver is a source of iron to prevent anemia (56.0%). Milk is a source of protein and also a source of calcium which is high enough. As the same case as milk, green vegetables are also known rich of calcium. Socialization to eat vegetables and to drink milk has actually been done since 1950s, that is, by recommendation for consuming various kinds of foods, which consist of rice, side dishes, vegetables, fruits, and milk (Khomsan 2012). The recommendation is known as *Empat Sehat Lima Sempurna* (the first four-food group makes us healthy, the fifth-food group makes it perfect). Even though it has been campaigned for more than a half century, the Indonesian people's consumption of milk, furthermore

the poor peoples', was still very low. It was recorded that in 2010 the consumption of milk for Indonesian people was only 2 spoons per capita/day (Anonymous 2011). Besides the milk price which was relatively expensive for the poor people, the wives' limited knowledge of the benefits of milk for the growth was the basic reason why milk consumption among the Indonesian people still remained low.

Table 8.2. Distribution of the wives answering the questions on the nutritional and health knowledge correctly

No	Questions	Railway side (n=141)		Riverbank (n=159)		Total (n=300)	
		n	%	n	%	n	%
1	Carbohydrate sources such as rice, corn, sweet potato, cassava, noodle etc. are foods to consume more in order to have energy and to be able to work	89	63.1	101	63.5	190	63.3
2	Animal food is good for the growth of children's height and weight	71	50.4	76	47.8	147	49.0
3	Examples of protein sources are meat, egg, tofu and soybean cake	87	61.7	74	46.5	161	53.7
4	To have strong teeth and bones we should consume many calcium sources such as milk and green-leaf vegetables	68	48.2	97	61.0	165	55.0
5	Myopia is caused by a lack of foods containing vitamin A such as carrots and green leaf vegetables	124	87.9	138	86.8	262	87.3
6	To defecate smoothly every day we have to consume vegetables and fruits regularly.	130	92.2	148	93.1	278	92.7
7	Liver, meat, egg and green-leaf vegetables are useful to prevent anemia (sparkled, easy to be tired, to be weak)	78	55.3	90	56.6	168	56.0
8	Compared to tempeh, tofu contains more formalin	131	92.9	138	86.8	269	89.7
9	Smoking is hazardous to lungs and causes cough	130	92.2	149	93.7	279	93.0
10	Breast-milk is given to children up to two years old	84	59.6	96	60.4	180	60.0

Several other items of the nutritional knowledge which could be answered well were: vegetables and fruits can make defecation easy (the wives answering correctly was 92.7%), tofu is more frequently contaminated than soybean cake (89.7%), a deficiency of vitamin A can damage eyes (87.3%). Activities of nutrition and health counseling should be emphasized more on the aspects which have not been well understood yet. Considering the importance of mastering the nutritional and health knowledge for the housewives, activities of nutrition and health counseling should not only be done through *posyandu* but also through other activities which involve the wives such as a meeting to understand *Al Qur'an*, and a monthly social meeting among the women etc.

Attitude towards nutrition and health is a tendency to respond positively to a statement on nutrition and health. Attitude towards nutrition and health is a phase that is close to the behavior to nutrition and health which will be practiced in the daily life.

The table below showed that most (75.0%) of the wives who became the respondents of this research had a good attitude towards nutrition and health (score >80.0), and only 0.7% who had less attitude towards nutrition and health (score <60.0). The average score of the attitude towards nutrition and health was 82.3 (categorized as good). Districtrition of the attitude towards nutrition and health showed that those categorized as good (score >80.0) were found more among the wives in the riverbank (79.9%) than among the wives in the railway side (69.5%).

Table 8.3. Distribution of the wives by scores of the nutritional attitude

Category	Railway side (n=141)		Riverbank (n= 159)		Total (n=300)	
	n	%	n	%	n	%
Good (>80)	98	69.5	127	79.9	225	75.0
Adequate (60-80)	43	30.5	30	18.9	73	24.3
Less (<60)	0	0.0	2	1.3	2	0.7
Average score	81.2 ± 10.7		83.3 ± 10.5		82.3 ± 10.6	

As it was for the nutritional and health knowledge, in this research the items/statements for the nutritional and health attitude were also elaborated according to the responses of the wives (respondents). There were two of the items/statements which were responded by a small number of the wives as the statements should be responded, that giving breast-milk is not enough if it was only given until the child was one year old (40.7%), and consuming tofu and soybean cake is as good as consuming egg/meat (32.3%).

Table 8.4. Distribution of the wives by their responses to statements on nutritional and health attitude

No	Statements and responses	Railway side (n=141)		Riverbank (n=159)		Total (n=300)	
		n	%	n	%	n	%
1	Eating rice is important as an energy source (AGREE)	136	96.5	156	98.1	292	97.3
2	Drinking milk everyday is important for children (AGREE)	141	100.0	158	99.4	299	99.7
3	Eating vegetables everyday is beneficial for the health (AGREE)	141	100.0	159	100.0	300	100.0
4	Having breakfast is important(AGREE)	109	77.3	126	79.2	235	78.3
5	Consuming meat is useful to increase blood (AGREE)	123	87.2	131	82.4	254	84.7
6	Breast-milk is enough to be given until the children are one year old (DISAGREE)	56	39.7	66	41.5	122	40.7
7	Providing green leaves in the daily menu is better than providing colorless vegetables(AGREE)	125	88.7	148	93.1	273	91.0
8	Consuming tofu and tempeh is as good as eating egg/meat (AGREE)	45	31.9	52	32.7	97	32.3
9	Smoking habit needs to be discarded/reduced (AGREE)	113	80.1	153	96.2	266	88.7
10	Formalin is good to be used to preserve tofu, fresh fish and chicken (DISAGREE)	130	92.2	151	95.0	281	93.7

Giving breast-milk as a health recommendation is until children reach two years old but sometimes the wives could not breast-milk fully for two years. The duration of giving breast-milk will affect the growth and development of the children. A study conducted by Eckhardt *et al.* (2001) concluded that the children who were given breast-milk for 4 months had a ponderal index (W/H as a WHO recommendation to measure the relative body weight of infants) 0.07 unit greater than the children who were given breast-milk less than 4 months. Furthermore, various studies showed that breast-milk provision could increase 5 to 10 IQ points. Daniels *et al.* (2005) in their study provided an evidence that, after controlling all confounding factors, the children who got breast-milk in a longer duration had score of the cognitive development higher than those who got breast-milk in a shorter duration. This is because breast-milk contains enough DHA and EPA, which are needed by the brain to support the maturity of the nervous system as well as the growth and development of the brain (Perkins & Vannais 2004). The wives who did not fully breast milk for two years would give supplemental milk for their children such as formula milk (for children < 1 year old) or cow milk (for children > 1 year old). Muchtadi (2002) defined formula milk as a product in a form of milk powder (commonly cow milk) which has been formulated as such that its composition is close to breast-milk; whereas, Arisman (2004) defined formula milk as milk excluding breast-milk which is given to infants until they are one year old. Different from formula milk, cow milk or growth milk is given after children older than one year old.

In regards to the eating habit, the middle and lower group prioritized foods of carbohydrate sources (particularly rice) with side dishes such as tofu and soybean cake. Animal foods such as eggs/meat are rarely consumed due to the limited purchasing power of the households.

The nutritional and health practices were a reflection of a habit practiced by the households which became the samples of this research. From the table below, it is known that the average score of the nutritional and health practices was 62.4 (categorized as being adequate). The distributions of the nutritional and health practices between the samples staying in the railway side and of those in the riverbank were almost the same. There were 54.6% of the sample in the railway side and 50.9% in the riverbank who had a score of nutritional and health practices categorized as being adequate (skor 60-80).

Table 8.5. Distribution of the wives by their scores of nutritional and health practices

Category	Railway side (n=141)		Riverbank (n= 159)		Total (n=300)	
	n	%	n	%	n	%
Good (>80)	14	9.9	15	9.4	29	9.7
Adequate (60-80)	77	54.6	81	50.9	158	52.7
Less (<60)	50	35.5	63	39.6	113	37.7
Average score	62.2 ± 14.5		62.5 ± 14.1		62.4 ± 14.3	

Details of the nutritional and health practices as they can be seen in the table below showed that eating fruits everyday was only practiced by 10.7% of the samples. For the low-income people, fruits were foods which were considered expensive. Many of the households considered that eating fruits everyday was unnecessary. In addition to that, consuming vegetables everyday was only practiced by 39.3% of the samples. The low nutritional knowledge of the wives underlay the low percentage of the households that consumed vegetables everyday.

Table 8.6. Distribution of the wives by good nutritional-health practices

No	Statement	Railway side (n=141)		Riverbank (n=159)		Total (n=300)	
		n	%	n	%	n	%
1	Eating fruits everyday	17	12.1	15	9.4	32	10.7
2	Children under five drink break-milk or non-breast-milk everyday	39	70.9	29	87.9	68	77.3
3	Eating vegetables everyday	50	35.5	68	42.8	118	39.3
4	Avoiding foods containing formalin (tofu, chicken, and fresh fish)	106	75.2	109	68.6	215	71.7
5	Avoiding processed foods/drinks whose colors are too bright (chips, cakes, market snacks, syrup)	108	76.6	134	84.3	242	80.7
6	Giving exclusive breast-milk until the children reach 6 month	25	38.5	21	50.0	46	43.0
7	Consuming colored vegetables (carrots, spinach) more frequently than consuming the colorless ones (lettuce and cabbage)	121	85.8	146	91.8	267	89.0
8	Eating meat/chicken at least once a week	117	83.0	127	79.9	244	81.3
9	None of the household members is smoking	25	17.7	29	18.2	54	18.0
10	Eating animal foods more frequently than eating tofu and tempeh	31	22.0	26	16.4	57	19.0

According to Khomsan (2009), nutritional knowledge is an important prerequisite for changes in a nutritional attitude and a nutritional practice to occur. Therefore, to start a good nutritional practice, a good foundation for the knowledge is needed. The unfamiliarity with nutrition may lead someone to choose incorrect food stuffs and incorrect ways to process them. On the other hand, the wives with a good nutritional knowledge would usually practice a healthy eating pattern for their children so that their nutritional needs were adequate (Mariani 2002).

An exclusive breast-milk practice for six months has not much been done, only 43% of the samples practiced it. The figure was far greater if compared with the result of a study by Hardinsyah *et al.* (2002) who investigated breast-milk giving and formula-milk giving among infants in Bogor City. This study found out that as 40.7% of the infants were given exclusive breast-milk less than 4 months. Only 28.1% of the samples that got exclusive breast-milk as recommended by WHO, that is for six months. This becomes a challenge for medical staff because exclusive breast-milk has become one important message in *Pedoman Gizi Seimbang* (the Guide of Balanced Nutrition), and accordingly, this must be socialized in the community level.

From this nutritional and health practice it was also known that the consumption of vegetable side dishes was more frequently practiced than the consumption of animal side dishes. Besides the price of vegetable side dishes was cheaper than that of animal side dishes, the wives' knowledge on the importance of animal side dishes for the growth was still very low. Because of that, understanding on the importance of animal side dishes is always necessary to be emphasized so there will be a need for foods of good quality.

The households' low access to fruits, vegetables and animal side dishes illustrated that the households' access for foods was very low in the slum settlements. The National Board of Development Planning (BAPPENAS) defined a food access (households) as a condition of owned resources (social, technology, financial, natural, and human)

that are sufficient to gain and/or to exchange in order to fulfill food necessities, including in a household. The availability of foods in one area may be sufficient, but not all of the households in the area are able to get them and have an access for the foods, either in quantity or in variety. The problems of access to foods for the poor people were a complication of poverty problems, lack of permanent jobs, low and temporary incomes, and limited purchasing power.

9. FOOD CONSUMPTION PRACTICES

9.1. Frequency of Food Consumption

The assessment of food consumption frequency was done quantitatively by using a 2x24 hour recall and qualitatively by food frequency questionaire (FFQ). FFQ was used to measure the food consumption frequency in a certain period (the last one year) so it could mirror one or group's consumption patterns.

Rice is a cereal that is a staple food for the majority of Indonesian people. Up to now its role has not been replaced by other foods of carbohydrate sources. This also occurred in both areas of this research, where the frequency of rice consumption was twice a day or more than 14 times per week as seen in Table 9.1. Other foods of carbohydrate sources which come from cereals whose consumption frequency was high were noodles. The frequencies of noodle consumption either in the railway side or in the riverbank were 5.0 and 3.8 times per week respectively.

Table 9.1. Frequency of cereal consumption (times/week)

Foods	Railway side	Riverbank	Total
Rice	14.4 ± 4.8	16.9 ± 3.6	15.7 ± 4.4
Noodles	5.0 ± 4.3	3.8 ± 2.6	4.4 ± 3.5

Rice is food of a carbohydrate and protein source which is delicious and nutritious. Rice contains protein which is not good with amino lysine acid as a constraint; however, since it is consumed in a great amount, it contributes much to the daily protein consumption. Consumption of varied foods can complete the composition of amino acid which becomes the constraint of some foods. Metionin is an amino acid constraint of nuts. If rice is consumed together with nut

products such as tofu and tempe, the protein consumed becomes more complete and can be absorbed better than when each is counsumed in different times.

Noodles are a food that is cheap, easy to process, easy to get, and has a delicious taste so noodles are greatly consumed by Indonesian people. Unfortunately, noodles are made of wheat flour which cannot be produced in Indonesia. This makes high dependence on the importation of wheat flour from other countries. The Board of Food Security (2010) stated that the quality and quantity of food consumption for most of the people were still low, which was characterized by food consumption patterns which were invariable, of unbalanced nutrition, and unsafe. These consumption patterns were difficult to change because of (a) the limited economic ability of the households; (b) the limited knowledge; (c) the tendency of a decreasing proportion of local-based food consumption; (d) the slow development, dissemination, and adaptation of local food processing technologies to improve practicality in processing, nutritious values, economic value, social values, image and acceptability; (e) the influence of globalization of fast food industries, which are imported material-based, especially wheat; and (f) the influence of cultural values of eating practices that are not in line with the principle of food consumption which is varied, of balanced nutrition, and safe.

Table 9.2 shows the distribution of animal food consumption frequencies. Foods of protein sources whose prices were expensive, such as beef, chicken or fresh fish were very rarely consumed. The consumption frequencies were two times per week (chicken), 0.3 times (beef), and 2.2 times (fresh fish). The frequency of milk consumption was high, that is, 9.2 times per week, but milk was generally consumed only by children under five, as stated by 27 people.

Eggs were a food of an animal protein source which was consumed almost everyday (5.9 times per week) because their price was relatively affordable. This frequency of egg consumption was relatively high compared to the frequency of the poor people's egg consumption in Bogor areas, 3.6 times per week (Khomsan *et al*, 2006). Animal foods are

sources of protein whose amount and quality are good. Eggs contain a good quality of protein because they contain all kind of essential amino acid in a proportion suitable for the growth and tissue maintenance (Almatsier, 2002) so they are good to be consumed everyday.

Table 9.2. Frequency of animal food consumption (times/week)

Foods	Railway side	Riverbank	Total
Chicken	2.0 ± 1.7	2.0 ± 1.7	2.0 ± 1.7
Beef	0.5 ± 1.5	0.2 ± 0.4	0.3 ± 1.1
Fresh fish	1.9 ± 2.4	2.5 ± 1.9	2.2 ± 2.2
Salted fish	1.4 ± 2.9	1.5 ± 1.6	1.4 ± 2.3
Milk	9.2 ± 13.4	9.3 ± 14.7	9.2 ± 14.1
Eggs	6.7 ± 6.9	5.3 ± 5.0	5.9 ± 6.0

Nuts and beans are vegetable protein sources. Even though the protein quality nuts and beans is relatively lower that animal protein, nuts are also foods of phytoestrogen sources, which provide benefits to human health. Table 9.1.3. shows the frequencies of nut and bean consumption, and the highest consumption frequency was tempe and the second highest was tofu, which were consumed almost everyday. Almatsier (2002) stated that a mix of two kinds of vegetable protein or addition of a little animal protein to the vegetable protein would result in protein of good quality with a relatively cheap price. Being mixed, amino acids coming from various kinds of protein can compensate each other to get protein needed by the body for the growth and maintenance.

Table 9.3. Frequency of nut and bean consumption (times/week)

Foods	Railway side	Riverbank	Total
Tofu	6.1 ± 5.1	5.8 ± 4.8	5.9 ± 4.9
Tempe	7.1 ± 5.4	6.3 ± 5.0	6.7 ± 5.2
Bean	1.4 ± 2.6	0.9 ± 1.0	1.2 ± 2.0

Vegetables are foods of vitamin, mineral and fiber sources. Green leafy vegetables are sources of beta-carotene, which is conversed into vitamin A in the body. Green vegetables which were commonly consumed by the respondents in the railway side and in the riverbank were spinach, *kangkung*, lettuce, cabbage, and cassava leaves with the average frequencies ranging from 0.4 – 1.8 times per week, as they can be seen in Table 9.4.

Table 9.4. Frequency of leafy vegetable consumption (times/week)

Foods	Railway side	Riverbank	Total
Spinach	1.6 ± 1.5	1.3 ± 1.1	1.5 ± 1.3
Kangkung	1.2 ± 1.6	1.0 ± 0.9	1.1 ± 1.3
Lettuce	1.8 ± 2.4	1.0 ± 1.1	1.4 ± 1.8
Cabbage	1.9 ± 3.1	1.6 ± 1.1	1.7 ± 2.3
Cassava leaves	0.7 ± 3.6	0.4 ± 0.7	0.5 ± 2.5

Fruit vegetables which were most frequently consumed were tomatoes, that is, 3.1 times per week (Table 9.5). The tomatoes were commonly used as a supplement or ingredient in a variety of cooking such as soup, sauté or chilly condiment.

Table 9.5. Frequency of fruit vegetable consumption (times/week)

Foods	Railway side	Riverbank	Total
Siam squash	1.3 ± 1.4	1.1 ± 0.8	1.2 ± 1.1
Tomato	3.1 ± 3.5	3.1 ± 2.7	3.1 ± 3.1
Cucumber	1.4 ± 2.3	1.4 ± 1.7	1.4 ± 2.0
Eggplant	0.9 ± 2.5	0.6 ± 0.7	0.8 ± 1.8
Melinjo (a kind of seeds)	1.1 ± 3.0	1.0 ± 0.8	1.0 ± 2.1
Jengkol (a strong-smell fruit)	0.6 ± 3.6	0.2 ± 0.6	0.4 ± 2.5
Petai (a strong-smell fruit)	0.6 ± 4.1	0.2 ± 0.5	0.4 ± 2.9

Like vegetables, fruits are foods of vitamin, mineral and fiber sources. However, compared to vegetables, the prices of fruits are far more expensive. Among the people with a limited income, fruit

consumption was frequently considered to be not really important. This was illustrated in the low frequencies of fruit consumption as they can be seen in Table 9.6 the average frequency of fruit consumption was less than once in a week. Bananas and oranges were fruits which were most frequently consumed, that is, 1.6 and 1.4 times per week respectively.

Consumption of vegetables and fruits which are rich of vitamins, minerals and fibers gives a good impact to the body health. Vitamin A is useful for the sight, cell differentiation, the body immunity, the growth and development, reproduction, and prevention of coronary-heart diseases and cancer. Vitamin C is useful for the improvement of body stamina towards infection, as a coenzyme and a cofactor, antioxidant, of coronary-heart diseases and cancer. On the other hand, vitamin B1 functions as a coenzyme for various reactions of energy metabolism. Many vitamins need mineral to play their roles in metabolism, for example, vitamin C improves absorption of vitamin D when they are consumed at the same time, and calsiterol of vitamin D improves calcium absorption (Almatsier, 2002).

Table 9.6. Frequency of fruit consumption (times/week)

Foods	Railway side	Riverbank	Total
Guava	0.6 ± 1.4	0.3 ± 0.7	0.4 ± 1.1
Papaya	1.0 ± 1.6	0.6 ± 1.0	0.8 ± 1.3
Mango	0.4 ± 1.9	0.1 ± 0.4	0.3 ± 1.3
Pineapple	0.4 ± 2.5	0.1 ± 0.3	0.2 ± 1.7
Banana	1.8 ± 3.3	1.4 ± 1.6	1.6 ± 2.5
Lanseh fruit	0.5 ± 3.6	0.1 ± 0.3	0.3 ± 2.5
Rambutan	0.5 ± 4.1	0.0 ± 0.1	0.2 ± 2.8
Orange	1.7 ± 4.8	1.2 ± 1.1	1.4 ± 3.4
Zalacca fruit	1.3 ± 5.4	0.4 ± 0.9	0.8 ± 3.8
Melon	0.6 ± 1.4	0.3 ± 0.7	0.4 ± 1.1
Watermelon	1.0 ± 1.6	0.6 ± 1.0	0.8 ± 1.3

Optimal consumption of fruits and vegetables can improve the health and prevent ones from suffering some non-communicable diseases such as a coronary heart disease, diabetes, hypertension, and cancer (Van Duyn & Pivonka 2000). The Ministry of Health recommends vegetable and fruit consumption five portions a day, with a composition of 2 portions of vegetable and 3 portions of fruit or vice versa.

The frequencies of street food consumption in both slum areas were relatively high. Street foods commonly contain high fat and energy (high energy density*)* but low vitamins and mineral (low nutrient density). Fried snacks were street foods that were most highly consumed, that is, reaching 4.5 times per weeks (Table 9.7). This was because the fried foods were of cheap price, delicious and satiating.

Table 9.7. Frequency of street-food consumption (times/week)

Foods	Railway side	Riverbank	Total
Meatballs	2.4 ± 2.2	2.0 ± 1.5	2.2 ± 1.9
Siomay (a kind of fish balls)	1.1 ± 1.8	0.4 ± 1.1	0.7 ± 1.5
Fried snacks	5.0 ± 3.9	4.0 ± 3.4	4.5 ± 3.7
Chicken Noodles	1.6 ± 2.9	1.1 ± 1.3	1.3 ± 2.2
Sausages	2.1 ± 4.1	1.1 ± 2.1	1.6 ± 3.2
Crispy snacks	3.3 ± 4.8	3.2 ± 4.4	3.3 ± 4.6
Biscuits	2.9 ± 4.8	2.4 ± 3.2	2.6 ± 4.0
Seaweed snacks	1.8 ± 5.1	0.6 ± 1.3	1.2 ± 3.7
Boiled snacks	1.2 ± 5.4	0.7 ± 1.4	0.9 ± 3.8

As observed in Table 9.8, other kinds of foods whose consumption was high enough were tea and coffee. Tea and coffee were consumed almost everyday, with the frequencies of 5.9 and 10.0 times per week respectively.

Table 9.8. Frequency of tea and coffee consumption (times/weeks)

Foods	Railway side	Riverbank	Total
Tea	5.8 ± 4.9	6.1 ± 6.0	5.9 ± 5.5
Coffee	10.0 ± 12.3	10.5 ± 8.9	10.3 ± 10.6

9.2. Consumption and Food Consumption Level

An assessment of food consumption is an indirect way to know the nutritional status of an individual or a group. One unit of a food consumption assessment is the consumption level. The consumption level illustrates the percentage of consumption adequacy to the recommended adequacy.

To calculate the consumption level, the adequacy level of each individual in the slum areas was calculated. Based on the individual nutrition adequacy level, the average of the adequacy level in the slum areas could be obtained as seen in Table 9.9.

Table 9.9. The adequacy level of energy and nutrients (nutrient/capita/day)

Nutrients	Railway side	Riverbank	Total
Energy (kcal)	2 191±163	2 246±164	2 200±166
Protein (g)	48±4	50±5	49±5
Calcium (mg)	573±70	590±89	582±81
Iron (mg)	16±2	16±2	16±2
Vitamin A (RE)	547±39	566±46	557±44
Vitamin C (mg)	56±3	57±3	57±3

Table 9.10 shows the consumption of energy and nutrients in the railway side and in the riverbank. The standard deviations of most nutrients were very great, this showed the differences of the amounts of food consumption among the households in both slum areas were very high. Suhardjo (1989) stated that the food consumption of a household was influenced by the food pattern of the surrounding people, the availability of food materials, the household incomes, the number of the household members, the educational level and the mothers' knowledge as well as desires of most of the household members.

Table 9.10. Consumption of energy and nutrients per capita per day

Nutrients	Railway side	Riverbank	Total
Energy (kcal)	1 757±665	1 869±820	1 817±752
Protein (g)	56±29	63±31	60±30
Calsium (mg)	459±673	514±430	488±588
Iron (mg)	18±10	19±13	19±12
Vitamin A (RE)	906±1 184	1 825±3 378	1 399±2 627
Vitamin C (mg)	37±40	65±96	52±76

Food consumption is the main factor to the fulfillment of nutrient needs. Nutrients function to provide energy for the body, control the metabolic process in the body, repair the damaged body tissues as well as for the growth. Food consumption which is less than or over than the body needs and if this continues for a long time will negatively affect to the health. The health level obtained depends very much on the consumption level, either qualitatively or quantitatively (Sedioetama, 1996).

The average adequacy levels of energy and nutrients both slum areas are presented in Table 9.11. The average adequacy level of energy was still deficit (<90%), 81% in the railway side and 84% in the riverbank. Likewise, the adequacy level of calcium was also still low, that is, in the railway side (82%) and in the riverbank (90%). The vitamin C

adequacy level of the people in the railway side was still less (66%), on the other hand that of the people in the riverbank was over (144%). However, the adequacy levels of protein, iron (Fe) and Vitamin A were over for both groups of the people.

Table 9.11. Adequacy levels of energy and nutrients (%)

Adequacy Levels (%)	Railway side	Riverbank	Total
Energy	81±33	84±38	82±36
Protein	118±64	126±61	122±63
Calcium	82±134	90±77	86±108
Iron	114±71	120±73	117±72
Vitamin A	167±223	324±599	251±468
Vitamin C	66±71	144±164	91±131

Calcium is a mineral that exists in the body in a greatest amount, that is, 1.5 to 2% percents of the adult body weight or approximately one kg. Of that amount, 99% exists in the hard tissues, that is, bones and teeth. Calcium has an important role in the bone and teeth formation, in controlling blood clotting, as a catalyst of biologic reactions and muscle contraction (Almatsier, 2002). A calcium deficiency may cause osteoporosis and muscle cramps (tetany).

Vitamin C has many functions in the body, as a coenzyme or a cofactor. Ascorbic acid has a strong reduction ability and acts as an antioxidant. Vitamin C plays a role in healing an injury, increasing iron and calcium absorption, and improving body endurance towards infections (Almatsier, 2002).

The distribution of the households by the energy adequacy level can be seen in Table 9.12. Based on table 9.12, the highest percentages, 41.8% and 40.9%, in the railway side and in the riverbank respectively, showed that the households in both of the slum areas suffered a severe energy deficiency.

Table 9.12. Distribution of the households by their energy adequacy level

Energy Adequacy Level (EAL)	Railway side		Riverbank		Total	
	n	%	n	%	n	%
Severe deficiency (<70%)	59	41.8	65	40.9	124	41.3
Slight deficiency (70% ≤ EAL < 90%)	33	23.4	40	25.2	73	24.3
Normal (90% ≤ EAL ≤ 110%)	26	18.4	24	15.1	50	16.7
Over (EAL > 110%)	23	16.3	30	18.9	53	17.7

Energy in the human body may come from carbohidrat, protein and fat. An energy deficiency or excess energy may cause health problems. An energy deficiency may cause a lower body weight than the ideal body weight. It this happens to infants and children, this may result in marasmus characterized by the body which is emaciated, an old face, restless, weak, fretful, less energetic, decreased stamina to infections. On the other hand, excess energy will be converted into fat in the body, and this results in an excessive body weight or obesity. The result of a study by Wellman and Friedberg (2002) showed that obesity was a risk factor to diabetes type 2, a heart disease, hypertension, stroke, kidney stone, and several kinds of cancer.

The energy adequacy level of a household may describe the food stamina in the household. A household is called to have a food stamina if EAL ≥ 90%. From Table 9.12 it was known that as much as 65.6% of the households in the slum areas belonged to the households which did not have a food stamina.

Different from the energy adequacy level, the highest percentages of the households referred to those having the protein adequacy level categorized as over. As much as 47.5% and 58.2 % of the households in the railway side and in the riverbank respectively belonged to the households having the protein adequacy level categorized as over (Table 9.13).

Table 9.13. Distribution of the households by protein adequacy level

Protein Adequacy Level (PAL)	Railway side		Riverbank		Total	
	n	%	n	%	n	%
Severe deficit (<70%)	33	23.4	23	16.3	56	18.7
Slight deficit (70% ≤ PAL < 90%)	21	14.9	27	19.1	48	16.0
Normal (90% ≤ PAL ≤ 110%)	20	14.2	27	19.1	47	15.7
Over (PAL > 110%)	67	47.5	82	58.2	149	49.6

Protein holds an important role in the body, particularly in the growth and maintenance, controlling the water balance, in the antibody formation, as a nutrient transporter, and as an energy source. A protein deficiency among children may cause kwashiorkor characterized with disrupted growth, weak muscles, edema, a moon face, apathetic, no eating desire, fretful, de-pigmentation over the skin, and the hair becoming lusterless and easy to fall. (Almatsier, 2002). The high number (23.4%) of the households that were severely deficit of protein and the low adequacy level of vitamin C (66%) in the railway side compared to those in the riverbank may become one of the causes of the higher morbidity in the railway side than in the riverbank.

10. FOOD SAFETY

The Regulation of Indonesian Health Minister No 416/MENKES/PER/IX/1990 decides that the quality of clean water can be determined by physical, chemical, microbiological and radioactive analyses. Physical analyses towards the smell and the taste of the water from the railway side and the riverbank showed that the water was safe to consume because it did not smell nor taste. The color and turbidity levels of the water in the railway side were higher than those in the riverbank but the levels were in a safe status because they were still far below the water quality standard level.

A chemical analysis is determined by the contents of lead Pb (mg/liter) and metal Cu (mg/liter) in water. The results of the lead-content analysis in the railway side and in the riverbank showed that the Pb (mg/liter) was <0.004 mg/liter so with a standard quality of 0.05 the water was stated safe. Likewise, based on the result of the metal-content analysis, the water in the railway side and in the riverbank was safe because the Cu (mg/liter) content of the water was not over the standard (< 0.002 mg/liter). In details the results of the analyzed water which was used by the people in the railway side and in the riverbank physically, chemically, or microbiologically be seen in Table 10.1.

Table 10.1. Results of the clean water analyses

Kinds of Analyses	Railway side	Riverbank	Quality standard of clean water	Status
Physical Analysis				
- Smell	No smell	No smell	No smell*	Safe
- Taste	Tasteless	Tasteless	Tasteless*	Safe
- Color (TCU)	0.38	< 0.12	50*	Safe
- Turbidity (NTU)	0.41	0.08	25*	Safe
Chemical Analysis				
- Lead Pb (mg/liter)	< 0.004	< 0.004	0.05*	Safe
- Metal Cu (mg/liter)	< 0.002	< 0.002	1**	Safe
Microbiological Analysis				
- E. coli (APM/100 ml)	< 1.8	< 1.8	0*	Unsafe
- Salmonella sp (/100ml)	Negative	Negative	0*	Safe

Notes:

* The Regulation of Indonesia Health Minister No 416/MENKES/PER/IX/1990. Dated: 3 September 1990

** Water Standards in M.E.E., Official Journal of the EEC, No. C 214/6 s/d 11, 18/9/75 Directives

A microbiological analysis of clean water is determined by the number of E.coli (/100 ml) and Salmonella sp (/100ml) existing in the water. The E-coli analysis used the *most probable number* method. The results of the water analyses in the railway side and in the riverbank were the water contained < 1.8 /100 ml E. Coli so the water was stated to be unsafe for consumption. While, the content of Salmonella sp (/100ml) in the water in the railway side and in the riverbank was negative so its status was save. Even though based on the results of the physical and chemical analyses towards the water from the wells which the people in the railway side and in the riverbank usually used, the water was stated safe, the result of the microbiological analysis showed that the water analyzed was unsafe to be used.

To find out the safety of the foods consumed by the people in both areas were conducted some tests towards several food samples. The food samples that were selected were foods which were frequently consumed and suspected to contain some food additives, such as meatballs, tofu and chicken. The kinds of synthetic food additives which were frequently used were formalin and borax. The use of the additives was very hazardous for the health of the consumers who consumed them. The complete data from the results of the formalin and borax content analyses can be seen in Table 10.2.

Table 10.2. Results of the formalin and borax content analyses

Samples	Railway side		Riverbank	
	Formalin	Borax	Formalin	Borax
Meatballs				
- Sample 1	-	Negative	-	Negative
- Sample 2	-	Negative	-	Negative
- Sample 3	-	Negative	-	Negative
Tofu	Negative	-	Negative	-
Chicken	Negative	-	Negative	-

Note : - not analyzed

Formalin is a solution which is colorless and its smell is very strong. Formalin contains around 37 percents of *formaldehyde* in water. Formalin is usually added with methanol up to 15 percents as a preservative. Formalin is known as a disinfectant and commonly used in industries. Borax is a chemical compound which is able to raise a mixture, to make the food to be rubbery, as well as to kill microbes. Borax is often used by producers as food additives in meatballs, tofu, noodles, jelly noodles, chips, or *lontong* (boiled rice wrapped in banana leaves). The presence of borax and formalin in foods cannot be tolerated in any levels because it is very hazardous for the health. Because of that, the borax use is prohibited by *Badan Pengawas Obat dan Makanan*

(BPOM)— The Board of Food and Drug Supervision. The main hazard of formalin and borax if they are sucked in, are in contact with the skin, and furthermore if they are swallowed. The effects that arise can be: burnt injury in the skin, irritation in the respiratory track, allergic reactions, and cancer in the people, and if consumed for a long time, they may cause death.

The meatball samples analyzed were from three mobile meatball sellers. The results of the analyses were negative, in fact the all three meatball samples in the two slum areas did not contain any borax. Similarly, the samples of the tofu and chicken which were usually consumed by the people in the railway side and in the riverbank did not contain formalin. Accordingly, it could be concluded that the samples of meatballs, tofu, and chicken from the railway side and the riverbank were relatively safe.

Coloring foods is generally intended to make the foods look fresher and more interesting so the foods arouse people's appetite or desire to eat them. Synthetic coloring additives for foods are obtained through a synthesis process of synthetic chemistry which relies on chemical matters, or from materials containing a natural dye through a chemical extraction. Some examples of synthetic dyes, among others, are yellow dyes such as tartrazin and sunset yellow, red dyes such as allura, eritrosin, amaranth, and carmoisine; blue dyes such as *Biru Berlian*, and orange dyes such as sunset yellow FCF.

Based on a regulation of the Minister of Health-- *Permenkes No. 239/menkes/Per/V/1985* about some dyes which are stated as hazardous materials, the dyes which are prohibited for foods, among others, are: Auramine, Alkanet, Butter Yellow, Black 7984, Burn Umber, Chrysoidine, Chrysoine S, Citrus Red No.2, Chocolate Brown Fb, Fast Red E, Fast Yellow AB, Guinea Green B, Indanthrene Blue RS, Mageta, Matanil Yellow, Oil Orange SS, Oil Orange XO, Oil Yellow AB, Oil Yellow OB, Orange G, Orange GGN, Orange RN, Orchil and Orcein, Ponceau 3 R, Ponceau SX, Ponceau 6 R, Rhodamin B, Sudan 1, Scarlet GN, and Violet 6 B.

Synthetic dyes which are not for foods and drinks (textile dyes) can endanger human health if they penetrate into the human body because they are carsinogen (causes cancerous diseases. This test was done to find out the level of using the prohibited dye as food materials on the chip samples. The dyes which were analyzed were Ponceau 4R (CL 16255), *kuning* FCF (CL 15985), Tartazin (CL 19140), *Biru Berlian* (CL 42090), and Rodhamin B (CL 45170).

The analyzed samples of chip 1, that is, (S14), 2 (S17) and 3(S18) were taken from the railway side. The analysis of chip 1 (S14) on synthetic dyes showed that the samples contained Ponceau 4R, *Kuning FCF*, Tartazin, and *Biru berlian* with a safe satus. Chip 2 (S17) contained dyes Poneau 4R and yellow FCF with a safe status and there was a dangerous substance, that is Rhodamin B in the sample. Sample chip 3 (S18) after analyzed showed that the contents of the synthesis of dyes were in forms of Tartazin, Ponceau and *Kuning CFC* with a safe status. In details the results of the dye analyses in chips can be seen in Table 10.3.

The analyzed samples of chip 4 (M13), 5 (M15) and 6 (M16) were taken from the riverbank. The result of the analysis on chip 4 (M13) showed the sampled chip contained a synthesis coloring substance, namely, Tartrazin and *Kuning FCF* so it as safe to be consumed. In the sampled chip 5 (M15) was identified synthesis coloring substance in forms of Ponceau 4R, Tartazin FCF, *Kuning FCF*, Tartazin, and *Biru berlian*. Thus, the sample was in a safe status for consumption. In the last sample, chip 6 (M16), based on the analysis result, was not identified with a synthesis coloring substance or negative co it could be said to be safe for consumption.

Table 10.3. Results of the dye analyses in chips

Kinds of analyses	Results of Analyses	Status*
From the railway side		
- CHIP 1 (S14)	Ponceau 4R (CL16255)	Safe
	Kuning FCF (CL15985)	Safe
	Tartrazin (CL19140)	Safe
	Biru berlian (CL42090)	Safe
- Chip 2 (S17)	Ponceau 4R (CL16255)	Safe
	Kuning FCF (CL15985)	Safe
	Rhodamin B (CL45170)	Hazardous
- Chip 3 (S18)	Tartrazin (CL19140)	Safe
	Ponceau 4R (CL16255)	Safe
	Kuning FCF (CL15985)	Safe
From the riverbank		
- Chip 4 (M13)	Tartrazin (CL19140)	Safe
	Kuning FCF (CL15985)	Safe
- Chip 5 (M15)	Ponceau 4R (CL16255)	Safe
	Tartrazin (CL19140)	Safe
	Kuning FCF (CL15985)	Safe
	Tartrazin (CL19140)	Safe
	Biru berlian (CL42090)	Safe
- Chip 6 (M16)	Negative	Safe

Note :
* The regulation of Indonesian Minister of Health, Peraturan Menkes RI Nomor: 239/Men.Kes/Per/V/85

Vegetables are one source of vitamins, minerals and fibers which are good for human health so they are good if consumed daily. Several factors such as planting, distributing, processing, serving, etc. may contaminate or damage the substances in the vegetables. Because of that, that the original purpose of vegetable consumption is for the

health, if the vegetables have been contaminated by substances such as heavy metal may turn to be hazardous to the body. Heavy metal is a chemical element with a specific gravity greater than 5 gr/cm³.

Heavy metal is considered hazardous for the health if it is excessively accumulated in the body. Some kinds of heavy metals may trigger a cancer (carcinogen). Heavy metal may penetrate into the human body through food, drink, or air. Heavy metals such as chopper, selenium, or zinc are required by the body to support the body metabolism. However, they may be potential to become a toxic if their concentration is excessive in the body. *SK Dirjen POM No:03725/B/ SK/VII/89, SK Kepala BPOM RI Nomor HK.006.1.52.4001 and SNI 7387:2009* provide the standard of heavy metal contamination in foods, particularly in vegetables. Therefore, the safety levels of vegetables can be assessed.

Table 10.4. Results of the analysis of heavy metals in fresh vegetables (mg/kg)

Vegetables	Railway side			Riverbank			Standard		
	Pb	Cu	Fe	Pb	Cu	Fe	Pb*	Cu**	Fe***
Beans	< 0.04	3.36	0.36	< 0.04	1.14	7.18	0.5	5	5
Spinach	< 0.04	0.96	74.5	< 0.04	1.66	56.4	0.5	5	5
Kangkung	< 0.04	1.01	8.40	< 0.04	0.31	3.76	0.5	5	5
String beans	< 0.04	1.16	12.8	< 0.04	1.76	56.8	0.5	5	5
Cabbage	< 0.04	1.46	11.8	< 0.04	26.3	0.69	0.5	5	5

Notes :
* *SK Kepala BPOM RI Nomor HK.00.06.1.52.4011*
** *SK Dirjen POM No : 03725/B/SK/VII/89*
*** *SNI 7387:2009*

Kinds of vegetables which were analyzed to find out their heavy metal contents in this study were beans, spinach, *kangkung*, string beans, and cabbage, as they can be seen in Table 10.4. The results of the analyses showed that the sampled beans contained Pb < 0.04 mg/

kg, Cu = 3.36 mg/kg and Fe = 0.36 mg/kg so the beans are safe to consume. The sampled spinach was detected to contain Pb < 0.04 mg/kg, Cu = 0.96 mg/kg and Fe = 74.5 mg/kg. The sampled *kangkung* was detected to contain Pb < 0.04 mg/kg, Cu = 1.01 mg/kg and Fe = 8.40. The sampled string beans analyzed contained Pb < 0.04 mg/kg, Cu = 1.16 mg/kg and Fe = 12.8 mg/kg. The sampled cabbage contained Pb < 0.04 mg/kg, Cu = 1.46 mg/kg and Fe = 11.8 mg/kg. The results of the analyses showed that the high contents of iron metal in spinach, *kangkung*, string beans and cabbage which were higher than the standard allowed and they were stated unsafe for consumption.

11. NUTRITITONAL STATUS

11.1. Nutritional Status of the Mother

Anthropometry is very commonly used to assess a nutritional status from various imbalances in energy and protein intakes. These problems are usually observed from the physical growth pattern and the proportion of the body tissues such as fat, muscles and the amount of water in the body. The anthropometric measurement includes body weight, body height, body folds, circumference, and the width of the bones. Various measurement and anthropometric techniques are grouped into three categories, namely (a) body weight and body height, (b) estimation of fat and energy stocks, and (c) mass without fat, protein mass and functional components (Shils *et al.* 2006).

Mid Upper-arm circumference (MUAC) is one of anthropometric measures which can describe the condition of present and past nutritional statuses, but it is less sensitive towards the nutritional status changes and a short term health. MUAC is used to measure the body composition including muscles and body fat so this is one of the methods to filter individuals who suffer for energy and protein malnutrition (PEM). MUAC can also be used to determine the nutritional status of pregnant mothers (WHO 1995; Fahmida & Dillon 2011; Anggraeni 2012).

The pregnant mothers selected as the respondents were as many as five people, while the breast-feeding mothers as the respondent were 13 people. The nutritional status of the breast-feeding mothers and the pregnant mothers were determined by UAC. Based on the UAC, the nutritional status of all of the pregnant and breastfeeding mothers was good since all of the respondents had percentile values of MUAC ≥ 85%. Whereas, the nutritional status of the mother in normal physiological condition (not pregnant nor breastfeeding) was assessed by measurement of body weight and body height, which can be seen in Table 11.1.

Table 11.1. Nutritional status of the mother

Variables	Railway side (n=141)	Riverbank (n=159)	Total (n=300)
Mothers' Body Height (kg)	57.2 ± 11.3	59.2 ± 13.7	57.7 ± 11.9
Mothers' Body Height (cm)	150.6 ± 7.1	150.9 ± 4.9	150.6 ± 6.7
MUAC (cm)	29.7 ± 4.1	27.7 ± 2.2	29.2 ± 3.8
Mothers' BMI (kg/m²)	25.3 ± 5.6	24.7 ± 3.6	25.2 ± 5.3

From the data of the Mothers' anthropometry (body weight and body height), their body mass index (BMI) was calculated. The Ministry of Health has determined that BMI >25.0 is categorized as fat. The mothers in the railway side had a BMI of 25.3 (fat) on average, while the mothers in the riverbank had a BMI of 24.7 (normal and close to fat) on average. At present various degenerative diseases due to obesity start to appear. Therefore, food patterns with a balanced diet need to be socialized for the entire people of different social statuses. Including people in the slum settlements.

11.2. Nutritional Status of Children under Five

Nutritional status is an ultimate result of the balance between food intakes into the body and the body needs of the nutrients. The anthropometric measurements applied are body weight and body height. The indicators used to assess the nutritional status of children under five are BW/A, BH/A and BW/BH. The three indicators can illustrate the nutritional status of children under five which is general, chronic or acute.

The indicator of BW/A provides a description on the nutritional status which is general, not specific. The high or low prevalence indicates the presence or absence of nutritional problems of children under five, but this does not give an indication of chronic or acute

nutritional problems (Balitbangkes, 2008). Table 11.2 displays that the majority (65%) of the under-five children possessed a normal nutritional status. However, the people who lived in the slum areas suffer double nutritional problems, namely, the high prevalence of underweight children under five, that is, as much as 25% and fat as much as 18.8%. The Health Department determined the *cut off point* of the problem of being lack of nutrition or underweight ≥20% as a big public health problem, and of being over nutrition or overweight 10-19.9% as a moderate one.

Table 11.2. Distribution of the under-five children by BW/A-based nutritional status

Category (Z-score)	n	%
Underweight (Z-score < -2 Sd)	30	25.6
Normal (-2 Sd ≤ Z-score≤ 2 Sd)	65	55.6
Overweight (Z-score > 2 Sd)	22	18.8
Total	117	100.0

The prevalence of stunted children under five in the slum areas was relatively moderate, that is, as much as 28.2% (Table 11.3). This prevalence figure was relatively lower that the prevalence of the national stunted children based the data of the Basic Health Research (*Riset Kesehatan Dasar, Riskesdas*) 2010, that is, 35.6%. The indicator of BH/A TB/U gives an indication of nutritional problems which are chronic as a result of a condition which occurs continuously for a long time, for instance: poverty, unhealthy life behavior and nursing patterns/food provision which is not good since the children were born, which result in the stunted children (Balitbangkes, 2010).

Table 11.3. Distribution of the children under five by BH/A-based nutritional status

Category (Z-score)	n	%
Stunted (Z-skor < -2 Sd)	33	28.2
Normal (Z-skor ≥ -2 Sd)	84	71.8
Total	117	100.0

The prevalence of underweight, of normal and of overweight based on the body weight by the body height (BW/BH) were almost equal, that is, 28.9%; 38.6% and 32.5% respectively (Table 11.4). The prevalence of nutrition deficits based on BW/BH or wasting in the slum area was very high, that is, >15%. The prevalence figure of wasting children under five in the slum area was also higher than the data of *Riskesdas 2010*, that is, as much as 13.3%. The prevalence of obesity in the slum areas was also categorized as very high, that is, ≥20%. This prevalence figure was far higher than the national prevalence of obesity, that is, 14%.

Table 11.4. Distribution of the under-five children by BW/BH-based nutritional status

Category BW/BH (Z -score)	n	%
Underweight (Z-skor < -2 Sd)	33	28.9
Normal (-2 Sd ≤ Z-skor≤ 2 Sd)	44	38.6
Overweight (Z-skor > 2 Sd)	37	32.5
Total	114	100.0

Based on the integrated indicators of the nutritional status, that is, BW/A, BH/A and BW/BH, the prevalence of nutritional problems in the slum areas experienced chronic and acute nutritional problems. The chronic nutritional problems are reflected from the prevalence of moderate nutritional problems for the BH/A indicator, while the

acute nutritional problems are reflected from the very high prevalence for the BW/BH (Z-score < -2) and the very high prevalence for the nutritional problem of being underweight by BW/A. The results of this research were in line with the data of *Riskesdas 2010* showing that Indonesia was a country which had double nutritional problems, the prevalence of children under five who were under-nutrient was high enough, that is, 17.9%, whereas, the over-nutrient problems tended to show an increasing trend, from 12.2% in 2007 to 14% in 2010. The problems of wasting and obesity among young ages may result in one's vulnerability towards various kinds of degenerative diseases at adult ages (Barker Theory).

12. MORBIDITY

According to law *UU no. 23, 1992*, health is a body, soul and social prosperity that enables everyone to live a productive life socio-economically. Whereas, a health status is a physically and mentally healthy condition in a certain time (Smet, 1994). There are four factors that influence one's health, namely, a human or genetic biological condition, environment, life style and health services.

The health problems are very outstanding, especially among the poor people group. The low incomes and prosperity make them prioritize more their incomes for fulfilling their food necessities than health. In addition, the housing environment, such as living in a slum settlement, makes the health level of the people becomes low so they are vulnerable to an epidemic of various diseases.

As many as 300 households involved in this study, and within the last two weeks found that most (72.4%) of their household members were sick. Of the 326 household members who were sick, a half were children. Table 12.1 shows that as much as 80.3% of the household members that lived in the railway side had a poor health status (sick), while in the riverbank the number of the household members who were sick was lower (63.8%), but still high enough. This health status was far worse than that of the people living in the slum areas in Bangladesh in 2006, where there was only 27.3% of the people who were sick (IFPRI, 2007).

Table 12.1. Distribution of the household by their health status

Health Status	Railway side		Riverbank		Total	
	n	%	n	%	n	%
Healthy	47	19.7	77	36.3	124	27.6
Sick						
- Father	23	9.7	15	7.1	38	8.4
- Mother	46	19.3	51	24.1	97	21.6
- Children	102	42.9	57	26.9	159	35.3
- Others	20	8.4	12	5.7	32	7.1
Total Sick	191	80.3	135	63.8	326	72.4

According to Awasthi and Agarwal (2003), morbidity is influenced by household sizes, socioeconomic status, educational levels of mothers, hygienic practice, environmental sanitation and water availability. The things that affected the high morbidity in the railway side were due to the high population density, insufficient house ventilations, and because 20.6% of the mothers had low nutritional knowledge and 35.5% of them had a low nutritional and health practice. This condition was aggravated by the fact that only half of the children under five got complete immunization and the majority (84.4%) of the households had some of their household members smoke. Thus, the implementation of good environmental sanitation in the slum areas, particularly in the riverbank and by the railway side needs to be realized. The disordered environment of the housing affected the waste disposal system of the households. The sewer of sewage disposal which was not well arranged had a very great impact towards environmental sanitation and hygiene. The high morbidity resulted in health expenditures to be high. In these slum areas less than half (30 – 40%) of the households became members of a health insurance.

The result of a study by Gulis *et al.* in 2004 in slum areas in Nairobi, Kenya showed that environmental improvement such as reducing air pollution, proving drinking water, and good rubbish management

could increase the health status significantly and sustainably compared with the usual medical treatment.

The diseases which the households suffered from within the last two weeks were an upper respiratory track infection (URTI) such as cough (21.8%) and fever (23.9%), whereas, the number of the diarrhea and skin disease sufferers were very few (Table 12.2). Most of the URTI sufferers were children under five. The data from *Jakarta Pusat in Figure 2012* showed that URTI was contagious diseases which many of the people suffered from. The number of the sufferers was 26.213 people of 902,973 (total number of the citizen). Soekirman (2000) stated that in developing countries the problems of child health were commonly respiratory tract infections and diarrhea. Bonita *et al* (2006) explained that environmental factors, sanitation, temperature, pollution, water quality, and socio-economic factors such as population density and poverty were factors affecting the spread and development of infections.

Table 12.2. Distribution of kinds of Diseases the household members suffered within the last two weeks

Kinds of diseases	Railway side		Riverbank		Total	
	n	%	n	%	n	%
Cough	46	24.2	25	18.4	71	21.8
Flu	43	22.6	35	25.7	78	23.9
Fever	24	12.6	20	14.7	44	13.5
Diarrhea	6	3.2	2	1.5	8	2.5
Skin Diseases	10	5.3	0	0.0	10	3.1
Dizziness	18	9.5	17	12.5	35	10.7
Short-winded	7	3.7	1	0.7	8	2.5
Others	36	18.9	36	26.5	72	22.1

Fever and dizziness, besides URTI, were diseases which the people commonly suffered. Among the children under five, fever usually followed URTI. On the other hand, dizziness were commonly felt the adult members of the households. The proportions of the four kinds of diseases which the respondents' households in the railway side and in the riverbank frequently suffered were almost the same. Within the last two weeks, the households which stayed in the riverbank never suffered any skin diseases, while in the railway side only 5.3% of the respondents' households suffered from the disease.

The durations the respondents suffered from the diseases were varied enough, ranging from 3 to 7 days. Table 12.3 showed that the shortest duration of being sick was dizziness (on average 3 days) and the longest was skin diseases (on average 7 days). The length of having cough and short-winded among the respondents staying in the riverbank was slightly longer than that in the railway side . Whereas, the lengths of having flu, fever, diarrhea, and others in both slum areas were almost equal. A study by Awasthi dan Agarwal (2003) showed that the children living in slum areas could be exposed to pollution from the environment, either pollution coming from outside their house or pollution from inside their house. This was caused by the use of vehicle fuel which was exaggerated, fuel for cooking, parents who were smoking, bad rubbish disposal, and the unhealthy condition of the housing. Exposure of cigarette smoke which was inhaled by the children from their parents, may increase the prevalence of URTI and asthma among the children. Whereas, the use of vehicle fuel is connected with the risk increase in the prevalence of respiratory diseases and the length of the illness.

Table 12.3. Distribution of the duration (days) of having the illnesses the household members suffered within the last two weeks

Kinds of Illnesses	Mean ± Standard Deviation		
	Railway side	Riverbank	Total
Cough	4.9 ± 3.3	6.0 ± 4.2	5.3 ± 3.6
Flu	4.2 ± 2.3	4.6 ± 3.3	4.4 ± 2.8
Fever	3.4 ± 2.0	3.9 ± 3.2	3.6 ± 2.6
Diarrhea	4.0 ± 2.5	4.5 ± 3.5	4.1 ± 2.5
Skin Diseases	7.3 ± 5.0	0.0 ± 0.0	7.3 ± 5.0
Dizziness	3.3 ± 2.1	2.4 ± 1.5	2.9 ± 1.9
Short-winded	6.6 ± 4.1	7.0 ± 0.0	6.6 ± 3.8
Others	6.5 ± 4.8	6.4 ± 5.2	6.5 ± 5.0

Physical access to get a treatment is not an obstacle for urban people since many medical centers have been built and evenly spread throughout the regions. The medical centers can be *puskesmas* (public health centers), clinics for medical practitioners or hospitals. Non-physical access such as finance commonly becomes the barriers in having a maximum medical treatment.

Table 12.4 shows that *puskesmas* was a medical center which was frequently visited by the respondents' household members. This was because its location was close enough and the cost was cheap. In addition to *puskesmas*, many household members of the respondents had their illnesses treated at home by buying drugs in a stall and having a rest. The drug from a stall which was easily obtained with a relatively cheap price should not frequently be consumed, moreover if it was consumed without considering the dosage recommended. The long-term side effects such as problems of heart and kidney functions may appear, particularly among children.

Table 12.4. Distribution of medical centers for the households within the last two weeks

Medical Centers	Railway side		Riverbank		Total	
	n	%	n	%	n	%
Puskesmas	72	37.7	57	41.9	129	39.4
Clinics	8	4.2	7	5.1	15	4.6
Medical Practitioners	17	8.9	13	9.6	30	9.2
Hospitals	23	12.0	2	1.5	25	7.6
Houses	71	37.2	57	41.9	128	39.1

The chronic diseases which the household members suffered were uric acid and hypertension, particularly among the adult household members. Geleijnse *et al* (2005) stated that a life style and diet such as low physical activities, obesity, over natrium intakes, low potassium and cod-liver oil intakes were the main causes of hypertension. Several clinical studies showed that an uric acid increase was correlated with the increase of hypertension risk (Feig *et al.* 2006). The high uric acid could be caused by a kidney malfunction which could cause problems of uric acid excretion and a high purine diet (Jin *et al.* 2012).

Skin Diseases and TBC were relatively much found among the respondents mainly in the railway side, where the people were more crowded that those in the riverbank. Skin diseases commonly appeared in the developing countries with warm/hot temperatures, bad sanitation and hygiene, the use of unclean water, and the high density level of population (WHO, 2005). The high density level of population could also increase the TBC spread. WHO estimated that people suffering TBC stayed in houses with bad ventilations, and a dense population could spread the disease to 10-15 people. In Asia, the number of TBC sufferers in slum areas was 9 times greater than the number of TBC sufferers in non-slum areas (USAID, 2002).

Table 12.5. Distribution of the chronic diseases that the household members have ever suffered

Kinds of diseases	Railway side		Riverbank		Total	
	n	%	n	%	n	%
TBC	25	17.7	23	14.5	48	16.0
Skin diseases	32	22.7	25	15.7	57	19.0
Hypertension	55	39.0	64	40.3	119	39.7
Diabetes	9	6.4	16	10.1	25	8.3
Heart	10	7.1	5	3.1	15	5.0
Uric acid	59	41.8	67	42.1	126	42.0
Others	17	12.1	24	15.1	41	13.7

13. HEALTHY AND CLEAN LIFE BEHAVIOR

Healthy and clean life behavior is a set of behaviors practiced on the basis of awareness as a learning result which makes someone or a household can help his/her own self in the health matter and take an active role in realizing the public prosperity (Depkes, 2007). The optimal degree of the society is featured by its people who live with a healthy behavior and in a healthy environment, have an ability to get an access to a health service which is qualified, fair, and evenly distributed (WNPG, 2000). The following is the distribution of the respondents based their healthy life behavior.

Table 13.1. Distribution of the respondents by healthy life behavior

Healthy and clean life behavior	Railway side (n=141)		Riverbank (n= 159)		Total (n=300)	
	n	%	n	%	n	%
Households become members of a health finance (*Askes, Askeskin*, or health finance/*JPKM*	57	40.4	54	34.0	111	37
Childbirth is helped by a medical staff	120	85.1	112	70.4	232	77.3
Weighing children under five is periodically done in the *posyandu*	76	53.9	54	34.0	130	43.3
Children under five get a complete immunization	84	59.6	64	40.3	148	49.3
None of the mothers' household members smokes	22	15.6	35	22.0	57	19.0
Households' members do exercises regularly	18	12.8	37	23.3	55	18.3
Households' members have breakfast before having an activity everyday	86	61.0	113	71.1	199	66.3
Households' members usually eat various kinds of foods (eating vegetables and fruits everyday)	64	45.4	55	34.6	119	39.7
House ventilations are sufficient	45	31.9	52	32.7	97	32.3
The space density is 7-10m²/person	28	19.9	96	60.4	209	69.7

Based on the respondents' distribution in the railway side and in the riverbank, less than half of the respondents became a member of a health finance (*Askes, Askeskin*, or a health finance/*JPKM*). Almost all of the mothers who delivered a baby were assisted by a medical staff such as a midwife or doctor, but only half of them who regularly visited *posyandu*, either those staying in the railway side or in the riverbank. Thus, the children under five who got a complete immunization were also less than half. Other bad behavior was only a few household members who did not smoke and did exercises regularly. Even though most of the household members in the railway side and in the riverbank had a practice of having breakfast before having activities everyday, less than a half had a practice of consuming various kinds of foods (particularly vegetable and fruit consumption everyday). When viewed from the condition of the houses they stayed in, the houses which had sufficient air ventilation were only 31.9% in the railway side and 32.7% in the riverbank. The respondents in the railway side whose house had a space density of 7-10 m²/person were only 19.9%, while in the riverbank more than half of them (60.4%).

In general it was found out that the healthy and clean life behavior which included becoming a member of a health finance, childbirth assisted by a medical staff, weighing children under five in the *posyandu*, children under five having a complete immunization, a practice of consuming various kinds of foods was conducted better by the respondents staying in the railway side. Whereas, in the riverbank there were more of the respondents' household members who did not smoke, did exercises, had sufficient house ventilation, and had a wide house.

The personal hygiene of the households in the railway side and in the riverbank was good enough, which included a practice of brushing teeth, washing hands, using clean water, possessing a bathroom and a privy/toilet. Although most of them owned a privy/toilet, only very few of them had a *septic tank*. The respondents staying in the railway side were accustomed to flowing their feces to the sewer around their

house, and those in the riverbank were used to flowing their feces to the river. Besides flowing their feces, they also threw their rubbish and sewage into the river. Ironically, the respondents who lived in the railway side were not used to defecating in the toilet, whereas 65.2% of them owned a toilet.

Actually many of the houses in the railway side had been completed with a bathroom and toilet, but it was not so proper. There were only a small number of the houses which had a proper bathroom and toilet. There were still several houses which did not have any bathrooms and toilet. Usually for the households that did not have any bathrooms and toilet, their family members used the public facilities for bathing, washing and going to toilet or used the facilities of their neighbors who were usually their relatives.

Even though the houses in the riverbank were very close to the Ciliwung river, most of the people did not use the water from the river for bathing, and washing. The Ciliwung river was in fact used by them a place to dispose their household rubbish. Similarly with the railway side , in the riverbank, there were only a small number of the households that possessed a proper bathroom and toilet. Even several houses did not have any bathrooms and *to*ilet at all. Also, the households that did not have any bathrooms or facilities for bathing, washing, and going to toilet their household members used the facilities belonging to their neighbors who were usually their relatives. This sanitary condition was a little bit overcome by the availability of three public facilities for bathing, washing, and going to toilet, but the condition was not maintained because many people used them. One public facility was damaged due to the flood and it was not rebuilt at that time because there was no fund. The leader of the community had proposed a request for rebuilding it to the local government every year but there was no response yet.

Table 13.2. Distribution of the respondents by clean life behavior

Clean and healthy life behavior	Railway side (n=141)		Riverbank (n= 159)		Total (n=300)	
	n	%	n	%	n	%
Households are used to brushing teeth after eating and before sleeping	87	61.7	80	50.3	167	55.7
Households are used to washing hands before eating and after going to toilet using soap	118	83.7	138	86.8	256	85.3
Households always use clean water (having a tub for clean water and clean water available)	139	98.6	146	91.8	285	95.0
Households have a bathroom	102	72.3	107	67.3	209	69.7
Households have a privy/toilet at home	92	65.2	94	59.1	186	62.0
Houses have a *septic tank*	13	9.2	2	1.3	15	5.0
There is a sewer for disposing sewage	99	70.2	92	57.9	191	63.7
There is a rubbish taker in the house surrounding	81	57.4	53	33.3	134	44.7
The sewage is not flowed/disposed to the rive	112	79.4	10	6.3	122	40.7
Households' members are used to defecating in a toilet.	20	14.2	138	86.8	259	86.3

The majority of the people in the riverbank threw rubbish into the Ciliwung river and only a few of them burnt their rubbish, whereas only a few of the people in the railway side threw rubbish in the river and some others threw the rubbish in the rubbish area at the market which was far enough from the housing. Some others used the service of a rubbish taker who was paid Rp. 1.000 per day by each household. Although, most of the people in the riverbank threw rubbish into the Ciliwung river and only a few of them had their rubbish burnt**,** however, according to the oldest informant in that areas there was almost none of the people who suffered skin diseases because the condition of the

environment which was not hygienic. The disease that was often found among the people either in the riverbank or in the railway side were problems on their digesting system.

Table 13.3. Distribution of the respondents by sources of drinking and cooking water

Sources of water	Railway side (n=141)		Riverbank (n= 159)		Total (n=300)	
	n	%	n	%	n	%
Drinking						
- River	0	0.0	0	0.0	0	0.0
- Well	9	6.4	39	24.5	48	16.0
- *PAM*	53	37.6	2	1.3	55	18.3
- Rainwater	0	0.0	0	0.0	0	0.0
- Unpackaged water	2	1.4	11	6.9	13	4.3
- Packaged water	80	56.7	110	69.2	190	63.3
Cooking						
- River	0	0.0	0	0.0	0	0.0
- Well	22	15.6	116	73.0	138	46.0
- *PAM*	111	78.7	6	3.8	117	39.0
- Rainwater	0	0.0	0	0.0	0	0.0
- Unpackaged water	3	2.1	24	15.1	27	9.0
- Packaged water	5	3.5	12	7.5	17	5.7

For drinking and cooking the households used water in gallons which was bought in stalls or shops selling water in gallons. For taking a bath, and washing dishes and clothes and the households used water from the public well using a jet pump or used water from the public facilities for taking a bath, washing, and going to toilet. To wash foods the people of the riverbank did not use the river water which was very dirty and they had realized that the river water was not good for the health.

The distribution of the 141 respondents based on the drinking water sources in the railway side was that most of them consumed water packaged in gallons and water from *PAM* (a government unit that manages clean water for the public), that is, 56.7% and 37.6% respectively. A small number of the people consumed water from the well and unpackaged water bought from mobile sellers around their housing, that is, 6.4% and 1.4%, and none of the respondents who consumed the river water and rainwater.

The distribution of the 159 respondents by drinking water sources in the riverbank was that most of them consumed water in gallons and water from the well, that is, 69.2% and 24.5% respectively, a few of them consumed water from *PAM* and unpackaged water sold by mobile water sellers, that is, 1.3% and 6.9%, and none of the respondents that consumed the river water and rainwater.

The distribution of the 141 respondents by the sources of cooking water in the railway side was that most of them consumed water packaged in gallons and water from *PAM*, that is, 56.7% and 37.6%, a small number of the respondents consumed water from the well and water sold unpackaged, that is, 6.4% and 1.4%, and none of the respondents who consumed river water and rainwater.

The distribution of the 159 respondents based on the sources of cooking water in the riverbank was that most of the consumed water packaged in gallons and water from the well, that is, 69.2% and 24.5% respectively, a few of them consumed water from *PAM* and unpackaged water from mobile water sellers, that is, 1.3% and 6.9% respectively, and none of the respondents who consumed river water and rainwater.

Table 13.4 showed the distribution of the 141 respondents based on sources of water for taking a bath and brushing teeth in the railway side was most of them used water from *PAM*, and water from the well, that is, 100 (70.9%) and 40 respondents (28.4%) respectively, only 1 respondent (0.7%) who used the river water, and none of the respondents who used water packaged in gallons, unpackaged water from mobile unpackaged-water sellers and rain water.

Table 13.4. Distribution of the respondents by sources of water for taking a bath and brushing teeth

Sources of Water	Railway side (n=141)		Riverbank (n= 159)		Total (n=300)	
	n	%	n	%	n	%
River	1	0.7	0	0.0	1	0.3
Well	40	28.4	153	96.2	193	64.3
PAM	100	70.9	5	3.1	105	35.0
Rainwater	0	0.0	0	0.0	0	0.0
Unpackaged water	0	0.0	1	0.6	1	0.3
Packaged water	0	0.0	0	0.0	0	0.0

The distribution of the 159 respondents based on the sources of water for taking a bath and brushing teeth in the riverbank was that the majority (96.2%) of the people used water from the well, a few of them used water from *PAM* (3.1%) and unpackaged water from the mobile unpackaged-water seller (0.6%), and none of them used river water, packaged water in gallons and rainwater.

Table 13.5 showed that most of the people in the railway side and in the riverbank used water from the well and water from *PAM* for washing their daily needs. 60.3% of them used water from the wells and 35% of them used water from *PAM*, as sources of water for washing food materials. For washing their cooking utensils 64.0% of them used water from the wells, 34.3% of them used water from *PAM*; and for washing their clothes 65.0% of them used water from the wells and 34.3% used water from *PAM*. None of the respondents used the river water and rainwater to wash food materials, as well as none of them used rainwater and packaged water in gallons for washing cooking utensils and clothes.

The distribution of the 159 respondents in the riverbank based on the sources of water for washing food materials was that most of them used water from the well, that is, 145 respondents (91.2%), a few of them used water from *PAM* and unpackaged water from the

mobile unpackaged-water sellers, that is, 4 respondents (2.5%) and 9 respondents (5.7%) respectively, and none of the respondents used river water and packaged water in gallons and rainwater.

The distribution of the 141 respondents in the railway side based on the sources of water for washing food materials was that most of them used water from the PAM, that is, 101 respondents (71.6%), the rest of them used water from the well, that is, 36 respondents (25,5), unpackaged water from the mobile unpackaged-water sellers, that is 3 respondents (2.1%), and 1 respondent (0,7) used packaged water in gallons. None of the respondents used river water and rainwater.

The distribution of the 141 respondents in the railway side based on sources of water for washing their cooking utensils was that most of them used water from *PAM* and water from the well, that is, 99 respondents (70.2%) and 40 respondents (28.1%), a few of them used unpackaged water from the mobile unpackaged-water sellers and water from the river, that is, 1 respondent (0.7%) and 1 respondent (0.7%) respectively, and none of the respondents used packaged water in gallons and rainwater.

The distribution of the 159 respondents in the riverbank based on sources of water for washing their cooking utensils was that most of them used water the wells, that is, 152 respondents (95.6%), a small number of them used water from *PAM* and unpacked water from the mobile unpacked-water sellers, that is, 4 respondents (2.5%) and 1 respondent (0.6%) respectively, and none of the respondents used water from the river and packaged water in gallons.

The distribution of the total respondents, 300, in the railway side and in the riverbank based on sources of water to wash cooking utensils was that most of the respondents used water from *PAM* and water from the wells, that is, 103 respondents (34.3%) and 192 respondents (64%) respectively, a few of the respondents used unpackaged water from the mobile unpackaged-water sellers and water from the river, that is, 2 respondents (0.7%) and 1 respondent (0.3%), and none of the respondents used water packaged in gallons and rainwater.

Table 13.5. Distribution of the respondents by sources of water for washing food materials, cooking utensils and clothes

Sources of Water	Railway side (n=141)		Riverbank (n= 159)		Total (n=300)	
	n	%	n	%	n	%
Washing Food Materials						
- River	0	0.0	0	0.0	0	0.0
- Well	36	25.5	145	91.2	181	60.3
- *PAM*	101	71.6	4	2.5	105	35.0
- Rainwater	0	0.0	0	0.0	0	0.0
- Unpackaged water	3	2.1	9	5.7	12	4.0
- Packaged water	1	0.7	0	0.0	1	0.3
Washing Cooking utensils						
- River	1	0.7	0	0.0	1	0.3
- Well	40	28.4	152	95.6	192	64.0
- *PAM*	99	70.2	4	2.5	103	34.3
- Rainwater	0	0.0	0	0.0	0	0.0
- Unpackaged water	1	0.7	1	0.6	2	0.7
- Packaged water	0	0.0	0	0.0	0	0.0
Washing Clothes						
- River	1	0.7	0	0.0	1	0.3
- Well	42	29.8	153	96.2	195	65.0
- *PAM*	98	69.5	5	3.1	103	34.3
- Rainwater	0	0.0	0	0.0	0	0.0
- Unpackaged water	0	0.0	1	0.6	1	0.3
- Packaged water	0	0.0	0	0.0	0	0.0

In regard to the distribution of the respondents in the railway side based on sources of water for washing clothes, of 141 respondents, the majority used water from *PAM* and water from the wells, that is, 98 respondents (69.5%) and 42 respondents (29.8%) respectively, whereas, a small number of the respondents used unpackaged water from the mobile unpackaged-water sellers and water from the river, that is,1 respondent (0.7%) and 1 respondent (0.7%) respectively, and none of the respondents used water packaged in gallons and rainwater.

For the distribution of the respondents in the riverbank based on the sources of water for washing clothes, of the 159 respondents, the majority, that is, 153 respondents (96.2%) used well water; a few, that is, 5 respondents (3.1%) and 1 respondents (0.6%) used water from *PAM* and unpackaged water from the mobile unpackaged-water sellers respectively; and none used river water, water packaged in gallons and rainwater.

In regard to the distribution of the total respondents in the railway side and in the riverbank based on the sources of water for washing clothes, of 300 respondents, most, 103 respondents (34.3%) and 195 respondents (65%), used water from *PAM* and water from the wells respectively; a few used unpackaged water from the mobile unpackaged-water sellers and water from the rivers, that is, 1 respondent (0.3%) and 1 respondent (0.3%); and none used water packaged in gallons and rainwater.

14. COPING MECHANISMS

Psychological burdens emerged as an impact of the limited economic life. According to ESR, as one of the people from the selected households categorized as a household without any family members, almost the people at the slum area had experienced in this burdens. He was an outsider from Garut (West Java), who was considered as a leader of an outsider group from Garut staying in slum areas of the riverbank in Manggarai. He had left his wife and children in Garut to earn incomes in Jakarta since 1998. Lived in slum area, even though he had a job as a seller (clothes) at market Manggarai, but he often felt inferior and powerless since he felt marginalized. His income was only enough to meet his own need. For other necessities such as his child education, the health of his family members left in Garut, he could only gave once or twice in a year with an amount which was far from sufficient. According to ERS the people in the area where he stayed at that time seemed not to have any power and ability to come out from the poverty cycle, so they were just patient accepting such a poor condition. Feeling useless, having no rights, being neglected, being meaningless, and having no access to get anything often emerged among the people. These matters made the people in the slum areas look to be apathetic, inferior and often get a heavy stress and feel isolated in a hurly burly of the life of the wider communities.

The psychological burdens experienced by the people in railway side also, but they more able to overcome this psychological burdens with neglected the burden and patient accepting the conditions, made the psychological burdens faced by the people seem to be unobserved in their daily life. The statements "*Pusing sih sudah makanan kami sehari-hari*" (Being headache/confused was our daily food-- food in a metaphorical sense, whose literal meaning is a problem they faced) and "*Maunya sih marah, tapi marah pada siapa, ya akhirnya diam saja*"

(Really (I) want to be angry, but (I should be) angry at whom, so (I) just keep silent) were the answers from many households selected as the cases.

The government aids to help the people who faced a poverty as that faced by the people in the slum areas were not unavailable but the aids were not able to get rid of their poverty. This was because there were many of the people who did not utilized the social aids because they did not know that there were the government aids to the people in their areas. A lack of socialization on the social aids was due to the weak organization in the community level of the areas, and the ineffective participation and integration of the people in the main social institutions, which resulted in feeling afraid, high suspicion, and being apathetic. Most of the households selected as the cases did not know the social aids for them. The social aids which were known by most of them were *Raskin* (rice for the poor) and *BLT* (social aids in cash from the government to the poor). Some of the other social aids from the government, were *Jampersal* (an aid for childbirth), *Askin* (a health insurance for the poor), *Jamkesmas* (an aid for the community prosperity), *Gakin* (an aid for the poor), *Akesda* (an aid for the health of the regional people, and an aid to buy a cheap land for a cemetery, etc. Social aids from the more able people were such as meat as a religious offering which they got once a year at celebrating *Idul Adha*. Aids for the infrastructure were obtained from *PNPM* (*Program Nasional Pemberdayaan Masyarakat*—A national program for empowering the people). In addition to the social aids from the government such as that obtained by the people in the riverbank, the people in the railway side obtained other social aids such as aids for having a free health examination from the foundation of *Budha Bunda Tsu Zi*, 9 basic food materials from *LSM* (Non-government organizations) when there was a fire at di RT 09/03, aids for the households whose members passed away from *MPS* (*Masyarakat Peduli Sosial*—A social concerned group) organized by the local *RW.*

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Fulfillment of household food necessities is very much influenced by the social structure of the community. The existed social status and economic status in the community make a difference in the fulfillment of food necessities for a household. The fulfillment of food necessities among the households in slum areas depends very much on their household economic condition. The limited economic condition was felt as a big burden which continuously suppressed the household life that unfortunately often made the households feel stressed in the long run in facing their daily life.

Stress frequently faced by the people in both of the slum areas, either in the riverbank or in the railway side was a chronic stress, that is, a stress which is experience continuously for a long time such as stress because of the household economy which is uncertain everyday so each household needs a specific strategy so that the household food needs are constantly fulfilled.

Problems concerning with the fulfillment of food necessities which are not met because of economic factors may arouse stresses that are different for each household depending on the economic factors that cause the stress. Table 14.1 illustrates the economic factors that made the people in both of the slum areas feel stressed.

Table 14.1. Distribution of the respondents by economic stresses they felt

Economic Stresses	Railway side		Riverbank		Total	
	n	%	n	%	n	%
Feeling dissatisfied with their household income	76	53.9	82	51.6	158	52.7
Feeling dissatisfied with their husbands' present jobs	60	42.6	58	36.5	118	39.3
Feeling unable to meet their household needs/expenses	95	67.4	104	65.4	199	66.3
Feeling to get burdened for debts or debt installment	37	26.2	52	32.7	89	29.7
Feeling difficult in financing their child education	39	27.7	36	22.6	75	25.0

The economic factor which became the main cause for the household in both of the slum areas to suffer stress was because they felt unable to meet their household expenses (66.3%). The second main cause (52.7%) was feeling dissatisfied with their household income. The assumption that the household life was full of debts was, in fact, not fully proved. Only 29.7 % of the households felt being burdened with a debt or a debt installment, and that was found more in the riverbank (32.7%) than in the railway side (26.2%).s

Stress happened more among the housewives in fulfilling their food necessities among the people in both slum areas, either in the riverbank or in the railway side . This occurred because the kitchen matters were fully handed to the wives as a household manager, whereas the husbands focused on earning incomes. The signs and symptoms of stress that were experienced, among others, were: often getting headache, smoking over, having a bad sleeping practice, easy getting angry, and feeling inferior.

An individual will not let the negative effects of stress keep on appearing, and so he/she will do something to cope with. The actions taken by an individual to cope with a stress is called a coping strategy. A coping strategy is often influenced by one's cultural background, experience in facing problems, environmental factors, personality, self-concepts, and other social factors.

Coping is an observed or hidden behavior which is done by someone to reduce or to get rid of a psychological stress in a condition which is full of stress. According to Haber and Runyon (1984), coping is all behavioral forms and thoughts (positive or negative) which can reduce a condition which burden an individual so that it cannot arouse any stresses.

The purpose of coping is to reduce or to control conflicts that emerge from oneself or from outside (internal or external conflicts), so this can improve a better life. A coping behavior can also be said as a transaction which is done by an individual to overcome or to reduce

various kinds of demands (internal and external) from something that burdens or disturbs their life perpetuation.

There were several coping strategies in fulfilling the household food needs which were done by the people in slum areas either those living along the riverbankor those living along the railway side. Table 14.2 shows strategies which are known as "planned problem solving" strategies, that is, strategies which are done by using a planned way to make some efforts in order to change the condition so that the problems faced can gradually be overcome.

It was observed there were similar patterns of the coping strategies in the fulfillment of the household needs through the household expenditure in both of the slum areas, either in areas along the riverbank or along the railway side . The coping strategy which was mostly done in the two slum areas was that "the wives and husbands looked for other jobs besides their main jobs" (53%). MDN (33 years old, selected household, categorized as a nuclear family) and MTH (57 years old, selected household, categorized as a extended family), both from the railway side , were an example of husband and wife who worked to earn some incomes as a coping strategy in overcoming the fulfillment of their household food needs. MDN opened a small stall selling fresh drinks such as iced tea, and pop ice to help her husband who worked as a building laborer, and MTH opened a small stall selling drinks such as hot coffee and sweet tea to help her husband who also worked as a building laborer.

Table 14.2. Distribution of the respondents by coping strategies for fulfillment of household needs

Coping Strategies	Railway side		Riverbank		Total	
	n	%	n	%	n	%
Asking for or borrowing money from parents or relatives	73	51.8	48	30.1	121	40.3
Having to borrow to meet the household basic needs from non-relatives	70	49.6	54	33.9	124	41.3
Having to borrow to meet a need, such as, household furniture	26	18.4	26	16.4	52	17.4
Wives or husband need to find additional jobs	81	57.4	78	49.1	159	53.0
Selling/ mortgaging golden jewelry	24	17.0	14	8.8	38	12.6
Selling/ mortgaging non-electronic furniture	10	7.1	1	0.6	11	3.6
Selling/ mortgaging household gadgets	19	13.5	3	1.9	22	7.3
Wives have to work	79	56	82	51.6	161	53.7
School-aged children have to work	13	9.2	5	3.1	18	6.0

The second most frequently used coping strategy in both of the slum areas was "asking for a help from those outside the household", either by borrowing from parents, relatives or non-relatives (40%). Asking a help from an outside party by borrowing was done more by the households in the slum area in the railway side than by the households in the riverside. MTH from the railway side also belonged to a person who did a coping strategy by using a help from her relatives. She lived together with her mother. Even though her mother (Mrs. PNI) had been 70 years old, was still able to find some borrowing to meet her child's household food needs. Based on MTH's statement, so far everyday she always involved her mother to discuss the matters

on the food necessities, such kinds of food to buy, etc. If the financial condition did not allow them to buy any food materials, Mrs. PNI would soon take a role looking for some money borrowing from her friends near market Kramat Sentiong. According to MTH, she also tried to borrow some money but she was not successful, while if Mrs. PNI looked for some borrowing, she was successful. The reason was her mother was considered more trusted by those giving the borrowing. Accordingly, Mrs. PNI played a role in looking for some borrowing for the household. Borrowing some money and asking for food were commonly done among the people who had a family or close relation. They rarely borrowed or asked some food to people who did not have any family of close relation, even though the house of the person was very close to the house of the person who wanted to borrow some money or to ask some foods. Coping strategies in fulfilling the household food needs were also done through food expenditures. Table 14.3 shows similar patterns in both of the slum areas.

Table 14.3. Distribution of the respondents by coping strategies in food expenditures

Coping Strategies	Railway side		Riverbank		Total	
	n	%	n	%	n	%
Reducing the amount of basic food bought	73	51.8	74	46.5	147	49.0
Reducing the number of side dishes	84	59.6	71	44.7	155	51.7
Replacing rice with other staple foods	5	3.5	3	1.9	8	2.7
Reducing food frequency	42	29.8	32	20.1	74	24.7
Reducing tea/coffee/sugar use	56	39.7	45	28.3	101	33.7
Reducing children's street foods	61	43.3	68	42.8	129	43.0
Spare some food for tomorrow	36	25.5	24	15.1	60	20.0
Bringing a cut-lunch when going to work	35	24.8	27	17.0	62	20.7

From Table 14.3 above the coping strategy through food expenditures which was mostly used by the people in both of the slum areas was by "reducing the number of side dishes" (51.7%). It can be said that in the food material procurement, the people were not so consumptive. They did not have to provide complete food materials such as rice, side dishes, and fruits in a serve but they just provided what they could at that time. For example, they just prepared rice with one kind of side dish or one kind of vegetable. SPT's household (a case household selected with the category of *poor* nuclear family) in the riverside, sometimes cooked food from the vegetable and fish remnants in the market to fulfill the daily food needs. The vegetable and fish remnants were taken on the way home when SPT pushed his cart in the market. In an urgent condition, SPT had some regular stalls where she could ask for one kind of side dishes or vegetable around her house and pay it at a later time.

Further, a coping strategy by "reducing the amount of basic food" was also done much enough by the people in both of the slum areas (49.0%) so the people who suffered inadequate food and could not meet a balanced diet need were frequently met in both of the slum areas. The life concepts 'must be made enough' and 'as it is' mean that how much money existing or to exist is what the food materials must be bought with. The selected case, ASH, 28 years (categorized as a household without any children) who lived in the riverbank, she and her husband did not have enough money, they bought food materials as much as the money available. The worst possibility was asking for food from their relatives who lived in the same area as hers. Thus, ASH's family even could not determine the kinds of food for her and her family.

"Reducing children's street food" was also a coping strategy which was selected by many people of the two slum areas (43%). This strategy, as realized by the people, was very difficult to be taken since it was difficult to make the children understand that their parents did not have any money. Instead of being dizzy listening to their cry or

whimper, their parents complied with their children's wish even they more frequently borrowed the street foods than bought them.

A coping strategy "reducing their food frequency", was not the main solution in food fulfillment. Only 24.7% of them used this as a coping strategy in their food expenditures; however the description from this case household selected that did the strategy illustrated a real poverty level. In general each of the people ate 2 to 3 times a day however, the food frequency depended on the condition of the household economy. When the financial condition was not good, having a meal once a day was not a problem for them. Even in the worst condition, the parents chose not to eat and prioritized their children to have the meals. For MDN (33 years, of a selected *nuclear family*, her children's food needs were more important for them so when she and her husband did not have enough money to have meals for the whole family members, they try to make their children have the meals first. Food distribution was connected with a cultural concept of the local people. In general, among a patriarchal community, the mothers would prioritize their husbands and children to have meals. This was also reflected in the community in both of the slum areas, either in the riverbank or railway side . SHH (46 years old), a housewife of a selected household with a category of a widow from the riverbank changed food frequency to 1 to two times a day or even they did not eat meal at all. She preferred to prioritize her children to have a meal, while she herself did not matter whether she ate or not.

A coping strategy "replacing rice with other staple food materials" was very rarely done by the people in both of the slum areas (2.7%). It seemed to be difficult to replace rice as a staple food material with other food materials. They preferred selecting rice even if it was of very bad quality to replacing it with other basic food materials. "*Beras Raskin*" (Rice for the poor people), whose quality was more often very bad than good, was a government aid which was of very great help to the people to be constantly able to eat rice as their staple food.

"Sparing some food for tomorrow" was a coping strategy which was done by the people to solve the problems of their food fulfillment even though the number of the households that did this strategy was not much (20%). This strategy was taken by more people who lived in the riverbank (25.5%) than those in the railway side (15.15%). According to SDH (a selected case as nuclear family category), who lived in the riverbank, when the financial condition was inadequate, she sometimes used a trick in managing the availability of food materials by sparing some today food for tomorrow. The foods which were kept were those which were not easily rotten, such as rice and salted dried fish.

Coping strategy in non-food expenditures, that is, concerning with keeping personal cleanliness and health were also taken by the people in both of the slum areas. Tabel 14.4 shows that "choosing a cheap place to get a medical examination and treatment" and "replacing expensive drugs with the cheaper ones" were the coping strategies chosen by most of the people in the two slum areas, that is, 73.7% and 68.7% respectively. The striking difference lied in the two slum areas was that the coping strategy by selecting a cheap place to get a medical treatment was taken by more people (82.3) than the coping strategy by replacing expensive drugs with cheaper ones (71.6) the slum areas in the railway side ; whereas, in the riverbank, the two coping strategies just mentioned above were equally taken by the people (66%) as good ways in solving the problems of their food fulfillment.

Table. 14.4. Distribution of the respondents by coping strategies for non-food expenditures (cleanliness and health)

Coping Strategies	Railway side		Riverbank		Total	
	n	%	n	%	n	%
Replacing expensive drugs with the cheaper ones	101	71.6	105	66.0	206	68.7
Preferring taking *jamu* (traditional herbal medicines) to taking modern drugs	79	56.0	54	34.0	133	44.3
Choosing a cheap place to get a medical examination and treatment	116	82.3	105	66.0	221	73.7
Reducing to buy and use soap/ shampoo/ or toothpaste	38	27.0	29	18.2	67	22.3

Besides taking some coping strategies in the non-food expenditures concerning with health, the people also took some strategies in educational expenditures. "Reducing children's pocket money" was a way that was done by most of the people (29%) in the two slum areas either in the railway side or in the riverbank. Fulfilling the food needs by "stopping children from going to school" was apparently not considered as a good way by the people in the slum areas. There were only 9.0% of the people who chose this way as a coping strategy in fulfilling their food needs.

Table 14.5. Distribution of the respondents by coping strategies in non-food expenditure (educational expenditure)

Coping Strategies	Railway side		Riverbank		Total	
	n	%	n	%	n	%
Reducing children's pocket money	45	31.9	42	26.4	87	29.0
Stopping children from going to school	16	11.3	11	6.9	27	9.0
Buying secondhand uniforms	10	7.1	6	3.8	16	5.3
Buying secondhand shoes	10	7.1	8	5.0	18	6.0

Reducing daily expenditure by "replacing a fuel" was a coping strategy which was most difficult to be carried out by the people in the two slum areas, either in the slum area along the riverbank or the slum area along the railway side. In both of the slum areas, there were only 2.4% of the households that took this strategy. This was understood, even though the prices of petrol and LPG gas were increasingly expensive, there was no other fuel that was able to replace them since it was very difficult to get firewood in Jakarta nowadays.

Table 14.6. Distribution of the respondents by coping strategies in the non-food expenditures (fuels and other needs)

Coping Strategies	Railway side		Riverbank side		Total	
	n	%	n	%	n	%
Replacing fuels	5	3.5	2	1.3	7	2.4
Reducing the cigarette purchasing	61	43.3	52	32.7	113	37.7
Reducing the water/electricity/telephone use	57	40.4	89	56.0	146	48.7
Reducing the kitchen utensil purchasing	71	50.4	91	57.2	162	54.0
Reducing the clothes purchasing	92	65.2	96	60.4	188	62.7
Reducing the household furniture purchasing	86	61.0	94	59.1	180	60.0

Similarly, a habit of smoking heavily made the people in the two slum areas difficult to reduce expenditures on cigarette buying, so the proportion of the people who chose this coping strategy, "reducing cigarette buying", were only 37.7%. The way selected by most (48.7%) of the people to fulfill the food needs through the non-food expenditures was by "reducing the use of water/electricity/telephone" as a coping strategy which was done daily. This was done more (56.0%) in the slum area along the railway side compared to that in the slum area along the riverbank (40.4%). "Reducing the incidental non-food expenditures" such as reducing the expenditures on clothes buying was

the way most frequently done by the people (62.7%) in the two slum areas, either in the railway side or in the riverbank as a coping strategy in overcoming the problems of the household food fulfillment.

In conclusion, there were three coping strategies in fulfilling the food necessities which were carried out by all of the selected cases in the two slum areas which supported enough to quantitative data. The first coping strategy was called **positive reappraisal**. In this strategy the individuals acted by always thinking positively and taking whatever happens as a lesson and never blaming other people as well as thanking God for what they still possessed. The second strategy was called a**ccepting responsibility.** Accepting responsibility was reacting by arousing awareness of their own role in the problem faced and trying to put the matter as it should be and being able to adapt themselves in the conditions they were experiencing. The last coping strategy was s**elf controlling**. This strategy referred to making a regulation, either in feeling or action by always thinking prior to doing something to make a prompt action.

15.1. Conclusions

1. Family characteristics at riverbank and railway side were relatively similar. Wives and husbands were in their productive age and had low education level. Most husbands worked as labor, merchant and service provider. Most wives didn't work, although some worked to help their husbands by trading. Based on number of family members, most families in the slum area were middle size and big families with family members more than four.

2. Most of house ownership status were personal owned with narrow house condition. Average house floor width at the railway side was 30.8 m^2 and at the riverbank was 33.4 m^2. Railway side had higher population density than riverbank. The house usually consists of two main rooms, bedroom and kitchen with inadequate condition because children and parents sleep together and some house didn't have window.

3. Based on average income level, respondents were in non-poor category because the income was above the poverty line of DKI Jakarta province (IDR 355 480/capita/month) and World Bank (IDR 540 000/capita/month). Expenditure percentage were balanced between food and non-food expenses. The highest food expenses were for side dishes, rice and snacks. While the highest non-food expenses were for transportation, house rent, debt repayments, water bill, phone credit , recreation and saving/money gathering.

4. School children (7-15 years old) who were not schooling anymore were more in railway side (22.6%) than riverbank (2.7 %). Children aged 16-18 years who were not schooling anymore were even higher (>50%) in both slum areas.

5. Households at railway side and riverbank had relatively adequate nutrition knowledge and practice. Whilst, good nutrition attitude were commonly found among wives who lived at riverbank than railway side.

6. Rice was the main staple food and consumed most frequently, other staple food oftenly consumed was noodle. Expensive protein source food like beef, chicken or fresh fish were rarely consumed. Nuts and lentils most frequently consumed were tempeh and tofu, which were consumed almost everyday. Average frequency of fruit consumption was less than once a week. Frequency of snacks consumption at both slum areas was relatively high, and fried snacks were the most frequent.

7. Average energy and calcium adequacy level was still deficit. Almost half of households were in severe deficiency and a quarter were in mild deficiency. Meanwhile, adequacy level of protein, iron (Fe) and vitamin A in both areas were in excess.

8. Analysis of clean water in both slum areas showed it wasn't safe. Although analysis of water from the well at railway side and riverbank showed that it was physically and chemically safe, microbiology analysis showed that the water was not safe for consumption. Analysis of snacks showed rhodamine B was found in 1 out of 6 samples of crackers usually consumed by the community in the slum area. Meanwhile, heavy metal analysis of several vegetables showed they were not safe for consumption.

9. Communities living in this slum area were facing double burden nutritional problem. The prevalence of underweight, wasting and stunting among underfive children were 25.6%, 28.9% and 28.2%, respectively whereas the prevalence of obese underfive children was also high (18.8%). Overnutrition problem not only happened in underfive children, but also in wives as their average BMI were in the obese category. Nonetheless, all pregnant and lactating respondents had good nutritional status as their MUAC percentile was >85%.

10. Slum areas had high morbidity rate. Most common disease suffered by respondents' family members in the last two weeks was ARI such as cough and influenza, while diarrhea and skin disease were rare. Physical access to get treatment was not an issue because there were a lot of health care spread evenly in the area. Community health center was the most visited health care.

11. Less than a half respondent families were members of health fund (Health Insurance, Health Insurance for the Poor, or health fund/ Public Health Insurance). Almost all mothers gave birth with help from health worker such as midwives or doctors, but only half of them routinely visited the Integrated Health Post. Only less than half underfive children received complete immunization. Most families had smoking member and only a few exercised regularly. Breakfast habit was practiced by most of slum community, but consuming variety of food, especially vegetables and fruits everyday, hadn't been a habit.

12. Personal hygiene was good, consisted of several habits such as brushing teeth, washing hands, utilizing clean water, availability of bathroom and toilet. Nevertheless, there was still some people who didn't practice good hygiene like throwing trash to the Ciliwung river.

13. Stress underwent frequently by both slum areas was chronic stress. Economic factors as the main cause of household stress in both slum areas were unmet needs to sustain family expenses and unsatisfied with the family income. Planful problem solving was used as coping strategy to solve the problem. Coping strategies done to fulfill family needs/expenxes were wives also worked, looking for extra work and borrowing money from family or non family especially to purchase basic needs. Trade/pawn gold, electronic and non-electronic stuff were only done by a few respondents. Coping strategies related to food expenses were varied starting from reducing amount of side dishes and staple food bought, reducing children snacks, reducing tea/coffee/sugar consumption, reducing meal frequency, bringing food to the workplace and leaving food for the day after.

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14. Coping strategies related to non food expenses such as cleanliness and health, more respondents from the railway side chose low-cost health care or used herbs than modern medication. For education, reducing children pocket money was most commonly done by respondents. Dropping out from school was not considered as a good way by people of slum area. Reducing daily expenses by changing fuel and reducing cigarette purchase were the most difficult coping strategies done by people in both slum areas. There were three coping strategies done by all selected cases in both slum areas to fulfill food needs. They were positive reappraisal, accepting responsibility and self controlling.

15.2. Recommendations

1. Bad environment sanitation problem in the slum area is difficult to be solved because of residence density. Slum area arrangement needs to be done by local government by reallocating residence, such as providing inexpensive flats which is affordable by the community.

2. High drop out rate among 16-18 years old children usually related to education cost. Therefore, scholarship and free education which were the featured education program in Jakarta must be supervised continously so implementation at community level will run smoothly.

3. Nutritional problems that still dominant in slum areas need to be anticipated by optimizing nutritional and health service program especially through Integrated Service Post (*posyandu*). If service in Integrated Service Post improve, mother and child participation will increase and this will improve children nutritional status.

4. In terms of food safety, supervision to the food seller is necessary so that they will always notice any illegal additives and will not add it to food that is consumed daily by the people. Consumer education is also necessary in order that people will be more careful and unsafe food can be avoided.

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APPENDICES

Appendix 1. Socio economy at railway side

Appendix 2. Socio economy at riverbank

Appendix 3. Sanitation and hygiene at railway side

Appendix 4. Sanitation and hygiene at riverbank

Appendix 5. Food consumption practices at railway side

Appendix 6. Food consumption practices at riverbank

Appendix 7. Dissemination of research results