

REPORT

**A JOINT RESEARCH FOR NUTRITION IMPROVEMENT OF WOMEN
AT WORKPLACE IN INDONESIA**

**Situation analysis of nutrition and health status among women in
Indonesia**

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ABBREVIATION LIST

BH	Body Height
BMI	Body Mass Index
BMIZ	Body Mass Index for Age Z-score
BPJS	<i>Badan Penyelenggara Jaminan Sosial</i> (National Health Insurance)
CED	Chronic Energy Deficiency
CHD	Coronary Heart Disease
DM	Diabetes mellitus
HBP	High blood pressure
HDL	High density lipoprotein
HHEQ	Household expenditure
IFG	Impaired fasting glucose
IGT	Impaired glucose tolerance
LDL	Low density lipoprotein
LW	Lactating women
MOH	Ministry of Health of the Republic of Indonesia, previously Department of Health of the Republic of Indonesia
MUAC	Mid-upper arm circumference
NCD	Noncommunicable diseases
PAL	Physical activity level
PPW	Pre-pregnant women
PW	Pregnant women
WRA	Women at reproductive age

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EXECUTIVE SUMMARY

Background and objectives

In Indonesia, working women are considered vulnerable to malnutrition (MOH 2014). Compared with their male counterparts, they work longer shifts and have lower pay, which make them prone to inadequate dietary intake.

The present study had two main goals. First, we aimed to collect and analyze data related to the current situation of working women in Indonesia with regard to their health and nutritional status. Our second intention was to propose feasible approaches through public-private partnerships to tackle the identified issues. Specific objectives of this study with respect to women in the workplace were as follows: (1) identify their current health and nutritional status; (2) analyze existing policies, programs, and initiatives related to them; and (3) formulate recommendations to improve meal provision for them.

Study methods

This study was a desk review of the available literature regarding population, nutritional and health status, nutrient intake, and physical activity among Indonesian women. In addition, we carefully examined policies and regulations related to workplace meal provision. We collected both national- and regional-level information. For the latter, the two areas we selected were DKI Jakarta and West Java.

We obtained data regarding nutritional and health status from basic health research (RISKESDAS 2013). Food and nutrient intake data were taken from the Total Diet Study (TDS) of Indonesia and DKI Jakarta (2014). The TDS of West Java has not yet been published. We derived micronutrient intake data from a cross-sectional study conducted by Madanijah et al. (2016a, 2016b) in six sub-districts of Bogor Municipality. We obtained data on the key foods that comprise 75% of energy and nutrient intake from Book 2 of the National Socioeconomic Survey (SUSENAS): "Consumption of Calories and Protein in the Indonesian Provinces." The present study was conducted from February to March 2017.

Findings

Current health and nutrition status of women :

In this study, we examined nutritional and health status with respect to anthropometry, anemia, and chronic diseases. Regarding anthropometric status, the proportion of both undernutrition and overnutrition among adolescents in DKI Jakarta was higher than the national level. The prevalence of chronic energy deficiency (CED) among adults ≥ 18 years in DKI Jakarta was lower than the national level and in West Java. In contrast to the CED prevalence, the prevalence of overweight and obese adults was much higher in DKI Jakarta than in West Java and at the national level.

Among adults aged 18–19 years, CED was 24.5%, which was the highest for any adult age-group. The prevalence of CED tended to decline with increasing age. Conversely, the prevalence of overweight and obesity in adult women increased with age. We found overnutrition to be more prevalent in urban than in rural areas; the reverse trend was evident for undernutrition. We observed a tendency for the decreasing prevalence of CED and concomitant increasing prevalence of overweight and obesity to be in accordance with improved household wealth.

The prevalence of CED (mid-upper-arm circumference <23.5 cm) among pregnant women was higher than that of nonpregnant women. We observed this finding at the national level and in both DKI Jakarta and West Java. In addition, there was a tendency for the prevalence of CED among both pregnant and nonpregnant women to decline with increasing age. One exception from the overall pattern was evident in females aged 15–19 years, where the prevalence of CED was higher among nonpregnant individuals. Another exception was in women aged 20–24 years; the prevalence of CED was similar to that in females aged 15–19 years.

In term of location, the prevalence of CED was higher in rural than in urban areas. The prevalence of the lowest income was twice that of the highest. Improvement in income greatly reduced the prevalence of CED among both pregnant (from 37.1% to 20.2%) and nonpregnant women (from 28.1% to 17.1%).

Pregnant women with short stature (<150 cm) are prone to high-risk pregnancy. We found the prevalence of pregnant women with short stature to be 31.3%. There was a much higher prevalence of women with short stature in rural than in urban areas. Improvement in income (quintile 5 versus quintile 1) halved the prevalence of high-risk pregnancy.

The prevalence of anemia among women at the national level was 23.9%; we categorized this as a moderate public health problem in line with WHO (2008) cutoff values. At the national level, the prevalence among adolescent girls was 22.7%; we observed the same prevalence of 22.7% in women of reproductive age (WRA). We found the highest prevalence among pregnant women (37.1%). In terms of location, the prevalence was higher in rural than in urban areas. The prevalence of anemia was consistently reduced by improvement in income. As it reached quintile 4 of wealth index, the prevalence was 19.8%; this constituted a change in the public health significance from a moderate to a mild public health problem.

Prevalence of high blood pressure (HBP) was as follows: national level, 25.8%; West Java, 29.4%; and DKI Jakarta, 20.0%. The prevalence in West Java was higher than at the national level, and it was the fourth highest among all the provinces. The prevalence was higher among females than males. The prevalence of HBP was higher in older age-groups and in urban areas; the prevalence was similar across income levels.

The prevalence of diabetes mellitus (DM) was 6.9% at the national level. We identified the prevalence of intermediate hyperglycemia as 29.9% for impaired glucose tolerance (IGT) and 36.6% for impaired fasting glucose. Those prevalences were higher among women: 7.7% for DM and 32.7% for IGT, and they increased with age.

We classified the prevalence of hyperlipidemia according to lipoprotein levels of total cholesterol, high-density lipoprotein (HDL), low-density lipoprotein (LDL), and triglycerides (TGs) based on NCEP ATP III. The prevalence of high total cholesterol among the population aged ≥ 15 years at the national level was 10.1%; 25.8% had a borderline cholesterol level. The prevalence was higher among women (11.8%) and in urban areas (11.7%). With increasing age, the prevalence of both borderline and high total cholesterol also rose. Similarly, income improvement was correlated with higher prevalence of abnormal cholesterol levels.

The prevalence of low HDL levels among the population aged ≥ 15 years at the national

level was 22.9%; it was lower among women (15.3%). We found the prevalence to be similar among different age-groups and occupations. In rural areas, the prevalence of low HDL levels was higher than in urban areas (21.5% and 2.4%, respectively). We observed the tendency of reduced prevalence with improvement in economic status.

We found nonoptimal LDL levels in approximately 76% of the population aged ≥ 15 years at the national level. In terms of very high and high LDL levels, a higher prevalence was evident among women (5.7% and 11.9%, respectively) compared with national data for both sexes (4.8% and 11.1%, respectively). With increasing age, the prevalence of nonoptimal LDL levels also rose. We observed that this problem tended to be greater in urban areas and among wealthier individuals.

Abnormal TG levels were evident at the national level in approximately 25% of the population aged ≥ 15 years. The prevalence of abnormal TG was higher in urban than in rural areas. The prevalence among women was approximately 22%. We observed that the prevalence increased with increasing age. There was no significant correlation between the prevalence of abnormal TG levels with occupation type and wealth level; however, there was tendency for higher prevalence with increasing income level.

At the national level, the prevalence of coronary heart disease, heart failure, and stroke based on a physician's diagnosis among people aged ≥ 15 years was 0.5%, 0.1%, and 7.0%, respectively. We found the highest prevalence in the age-group of 45–54 years.

Chronic kidney disease and kidney stones based on a doctor's diagnosis were rarely identified among people ≥ 15 years at the national level (0.2 % and 0.6%, respectively). By contrast, physician-diagnosed diseases of the joint were more frequent at the national level (11.9%) than kidney conditions: the highest prevalence was in West Java (17.5%).

Food and nutrient intakes:

Based on the TDS in DKI Jakarta, disparities in energy and protein intake among the population were conspicuous. In terms of energy, 28.8% of the total population consumed $<70\%$ of the recommended dietary allowance (RDA); 12.4% consumed $>130\%$ RDA. For adolescents (aged 13–18 years), 22.6% consumed $<70\%$ RDA; 21.3% consumed $>130\%$ RDA. Among adults (aged 19–55 years), 32.8% consumed $<70\%$ RDA; 8.2% consumed $>130\%$ RDA. With respect to protein, 21.7% of the total population consumed $<80\%$ RDA; 45.8% consumed $>120\%$ RDA. Among adolescents (aged 13–18 years), 27.1% consumed $<80\%$ RDA; 34.2% consumed $>120\%$ RDA. For adults (aged 19–55 years), 19.3% consumed $<80\%$ RDA; 47.7% consumed $>120\%$ RDA. Owing to such disparities, we found it difficult to make an evaluation of the adequacy of energy and protein intake among the population by means of average intake value.

For fat, we used average intake value since detailed data were unavailable. The daily fat intake of WRA (aged 19–55 years) at the national level and in DKI Jakarta and West Java was 49.9 g, 69.7 g, and 55.1 g, respectively. The Indonesian RDA for women aged 19–29 years is 75 g; for those aged 30–49 years, it is 60 g. The daily fat intake of adolescent girls (aged 13–18 years) at the national level and in DKI Jakarta and West Java was 54.0 g, 83.3 g, and 60.3 g, respectively. The Indonesian RDA for adolescent girls aged 13–18 years is 71 g. It should be noted that the Indonesian fat RDA for adolescent girls (aged 13–18 years) was set to contribute 30.1% of the total energy

intake; we found the proportion of fat to total energy intake for adolescent girls in DKI Jakarta to be around 39%.

For micronutrient intake among women, we used the data of a cross-sectional study by Madanijah et al. (2016a, 2016b) in six sub-districts of Bogor Municipality. We did so because no national-level data were available. Those authors used 77% of RDA as the cutoff point for vitamin and mineral intake, which is commonly adopted in Indonesia; intake below that level is defined as inadequate. For iron and vitamin C, the median intake of pre-pregnant women (PPW), pregnant women (PW), and lactating women (LW) for all household expenditure quintiles (HEQ) in Bogor was below the cutoff point in all cases. Except with PPW of HEQ-4 (the highest household expenditure group), the median intake for vitamin A among PPW, PW, and LW was below the cutoff point. For both calcium and zinc, the median intake among lower household expenditure groups was below the cutoff point.

The prevalence of iron supplementation during pregnancy was around 90% at the national level and in DKI Jakarta and West Java. Fewer than half of the disbursed tablets were consumed within the 90-day period of supplementation.

The existing mandatory nutrient supplements in Indonesia are iodine in salt, iron in wheat flour, folic acid and B vitamins in wheat flour, and zinc in wheat flour. Among those, only data about iodine supplements in salt are available in RISKESDAS (2013); that study used examination by the titration method to evaluate the salt used in households. Fewer than half of households consumed salt with an adequate iodine level (30 ppm). Supplementation of vitamin A in non-branded cooking oils is scheduled to commence in Indonesia in 2019.

The consumption of vegetables and fruits by adolescents and adults at the national level and in DKI Jakarta was far below Indonesian recommended guidelines (minimum daily consumption of 400 g of vegetables and fruits); around two-thirds of the consumption should be from vegetables. Adolescents eat less than 20% of the recommended daily amount of vegetables and fruits; adults eat about 20%–40% of that amount.

Key foods that comprise 75% of energy intake were similar at the national level and in DKI Jakarta and West Java: cereals, prepared food and beverages, oil, and coconut. Similarly, 75% of protein intake also derived from cereals, prepared food and beverages, with the addition of fish, shrimps, squid, and shellfish.

For the level of physical activity, RISKESDAS (2013) defines “active physical activity” as activity causing small increases in breathing or heart rate lasting at least 10 minutes per day for a minimum 5 days, with a total activity time of 150 minutes a week. According to this definition, 73.9% of Indonesian people at the national level may be considered physically active. The proportion of physically active people was similar in West Java. However, people in DKI Jakarta were less active than those at the national level and in West Java: only 55.8% of the DKI Jakarta population was physically active. The proportion of the active population increased with increasing age until 44 years. There were more active people in rural than in urban area. As income level increased, there was a tendency for the proportion of the active population to decline.

Existing policy programs and initiatives:

In Indonesia, there are 18 regulations related to working women with respect to nutrients and dietary recommendations or guidelines, regulations related to workplace meal provision, nutritional improvement, breastfeeding, and chronic diseases. The regulations mainly derive from the Ministry of Health (MoH), Ministry of Manpower and Transmigration (MoMT), and Ministry of Women Empowerment and Children Protection.

Regarding meal provision in the workplace, MoMT Decree No. KEP.102/MEN/VI/2004 on Overtime Work Hour and Wages states that a company is obliged to provide food and beverages containing at least 1,400 kcal for each overtime work of more than 3 hours. The provision of food and beverage should not be replaced with financial compensation. A similar notion was stated in MoMT Decree No. KEP.224/MEN/2003 on the obligation of employers who employ women between 11 p.m. and 7 a.m. That decree states that employers are obliged to provide food and beverages containing at 1,400 kcal. The meals should be provided during a break period and should not be replaced with financial compensation. The provision of food and beverages, tools, and a dining room should be acceptable, and it should fulfill hygiene and sanitation requirements. The food and beverages given to workers should be diversified.

Discussions

This study identified several health and nutrition issues related to both undernutrition and overnutrition. This is clearly a double burden of malnutrition and is a growing public health challenge in Indonesia.

Our key finding related to primary nutritional challenges for women in the workplace was that there is a high prevalence of CED and inadequate food intake among adolescent girls and young adult women aged 15–19 years. They are a vulnerable group with respect to undernutrition. We also found a discrepancy related to their energy and protein intake compared with the RDAs. This issue should be addressed as a priority target for nutrition improvement in the workplace through the joint efforts of public and private concerns.

A second nutritional challenge is the prevalence of anemia, which we identified as a moderate public health significance in both adolescent girls and WRA; the highest prevalence was among pregnant women. The Indonesian government provides iron supplements to adolescent girls and WRA through the Community Nutrition Improvement Program; however, optimal iron supplement consumption among the population was insufficiently managed. We also observed insufficient iron consumption among WRA and pregnant women from their diets. Several initiatives addressing this challenge have been undertaken at the policy level as well as from the private sector. An example of the former is legislation regarding mandatory nutrient supplements in certain staples; an example of the latter is a pilot model developed to provide iron-fortified rice to adolescent girls. Hence, effective accountability frameworks targeting this challenge should be sought through public-private partnerships.

A third nutritional challenge is the rising prevalence of overweight and obesity as well as concurrent risks of chronic diseases, such as HBP and IGT. These challenges related to overnutrition are of increasing importance among WRA in Indonesia. This should therefore be recognized as a significant public health problem: more and more women will enter pregnancy with underlying chronic diseases and be more prone to high-risk pregnancy. Regarding dietary intake and physical activity, low intake of vegetables and fruits was an obvious issue, and we identified inactivity status among 30

to 50 percent of the population. Only a limited number of policy frameworks have addressed this growing challenge in Indonesia; however, increasing numbers of small-scale initiatives have been developed by both the public and private sectors.

Though some relevant policies and regulations exist with respect to providing meals in the workplace, there are no comprehensive standards or clear guidelines for implementing nutritional services for working women. According to Ministry of Health Regulation Number 23 Year 2014, nutrition improvement efforts should be undertaken to provide comprehensive nutritional services. Those efforts should include nutrition education, supplementation, treatment and surveillance; the efforts should also be conducted in the workplace so as to provide nutrition services outside health-care facilities.

With regard to the above challenges, comprehensive nutrition services in the workplace could complement and synergistically assist to improve public nutrition services in Indonesia. Such services in the workplace can be addressed through public-private partnerships, particularly with respect to meal provision. Several policies for overtime workers (MoMT Decree No KEP.102/MEN/VI/2004) and female workers engaged in late shifts (MoMT Decree No. KEP.224/MEN/2003) were issued a decade ago to address nutrition adequacy through meal provision. However, those policies provide no indication about nutritional quality, i.e., the proportion and quantity of each nutrient category. Therefore, policies for meal provision in the workplace to meet the requirements stated by the guidelines for balanced nutrition (MOH Decree 41/2004) and RDA 2013 (MOH Decree 75/2013) should be initiated and implemented.

This study was a desk review based on the available literature regarding population data, nutritional and health status, nutrient intake, and physical activity among Indonesian women as well as policies and regulations related to workplace meal provision. There are some limitations on the data availability in RISKESDAS (2013) and TDS (2014): they did not present their data in the appropriate categories for our expected target population, i.e., adolescent girls, nonpregnant WRA, pregnant women, lactating women, and with respect to regions and wealth index. However, this study provides sufficient data and analysis on the current health and nutritional status of Indonesian women in the workplace and covers existing policies, programs, and initiatives for working women. Despite that, the situational analysis and policy analysis were insufficient to meet our third objective: formulating recommendations for improving meal provision for women in the workplace. That was because we mainly relied on secondary data for our analysis. We included several interviews with relevant stakeholders; however, owing to time limitations, the number of stakeholders involved was limited. A future analysis should include more inputs from relevant stakeholders through Focus Group Discussions or stakeholder workshops.

BACKGROUND

Female workers in Indonesia is considered as nutritional vulnerable group. They work longer hours and often their take home pay is lower than those of male colleagues. Therefore, they are prone to suffer from low nutritional status caused by inadequate dietary intake.

Several studies illuminated that health problems related to under-nutrition were prevalent among female workers such as anemia (Soetrisno et. al. 1998, Suyardi et. al. 2009, Aminah and Iriyanto 2008) which was ranging from 35% to 62.4%. Another study (Lubis 2015) found high prevalence of vitamin D deficiency among female workers and showed that more than two thirds (90.2%) of studied female workers had abnormal serum vitamin D level, in which 46.2% were categorized as deficient, and 44.6% as inadequate. While on the other hand, over nutrition is also a raising health issue as Solechah et. al (2014) found 18.6% of female workers age 25-49 years in garment factory in Bogor, West Java suffered from metabolic syndrome. Pujiastuti (2008) also found similiar notion, that 45% of female workers age 30-45 years in matches' factory in Pematangsiantar, North Sumatra had BMI \geq 23 kg/m² or overweight.

Majority of intervention studies aimed to tackle nutrition problems among female workers usually focused on nutritional supplementation such as iron, vitamin B6, vitamin B12, folic acid, vitamin D, multivitamins and minerals (MVM) (Indriani et. al. 2011, Muwakhidah et al 2010, Oppusunggu 2009, Pratiwi 2016, Mahyaningtyas 2016, Mulyawati 2003, Agustina 2001, Yosephin et al 2015). Only few studies gave supplementary food as form of intervention (Agustina 2001 and Haribi 2004).

Since comprehensive studies encompasses nutritional status as well as their related health problems and feasible intervention among female workers in Indonesia were sparse if not in existence at the present moment, thus it is pressing to conduct such study. The comprehensive study drawn from the current situation surrounding female workers in Indonesia on their health and nutrition status is then essential to propose reasonable approaches through public-private partnership to tackle the identified issues.

OBJECTIVES

General objective

The main aims of this study were twofold, first was to collect and analyze current situation surrounding working women in Indonesia regarding their health and nutrition status, and the second was to propose feasible approaches through public-private partnership for tackling the identified issues.

Specific Objectives

- 1) Identify current health and nutrition status of women
- 2) Analyze existing policies, programs and initiatives for women in the workplace
- 3) Formulate recommendations for improvement of meal provision for women in the workplace

METHODS

Design and Time of Study

This study was a desk review on literatures regarding population, nutritional and health status, nutrient intake, physical activity among women as well as policies and regulations related to nutrition in the workplace and in regards to meal provision. The study was conducted from February to March 2017.

Data Sources

Table 1 List of data

No.	Data	Source	Method	Target	N	D	W
1	Population	Statistics Indonesia 2013	Projected census	15-49 years	√	√	√
2	BMIZ	MOH 2013a, MOH 2013b	Antropometric assessment	16-18 years	√	√	√
3	BMI	MOH 2013a, MOH 2013b	Antropometric assessment	≥18 years	√	√	√
4	BH	MOH 2013a, MOH 2013b	Antropometric assessment	Pregnant women	√		
5	Anemia	MOH 2013a, MOH 2013b, MOH 2013c	Biomedical assessment	≥1 year	√		
6	HBP	MOH 2013a, MOH 2013b	Direct measurement Interview	≥18 years 15-17 years (not published)	√	√	√
7	DM	MOH 2013a, MOH 2013b, MOH 2013c	Biomedical assessment	≥15 years	√		
8	Dislipidemia	MOH 2013a, MOH 2013b, MOH 2013c	Biomedical assessment	≥15 years	√		
9	Coronary heart disease, heart failure, and stroke	MOH 2013a, MOH 2013b	Interview	≥15 years	√	√	√
10	Kidney and joint disease	MOH 2013a, MOH 2013b	Interview	≥15 years	√	√	√
11	Total Energy, Protein, Fat and Carbohydrate intakes, and energy ration	MOH 2014a, MOH 2014b	Interview	Adolescent girls (13-18 years) Women (19-55 years)	√	√	√
12	Salt intake	MOH 2014a, MOH 2014b	Interview	13-55 years		√	
13	Sodium intake	MOH 2014a, MOH 2014b	Interview	Adolescent girls (13-18 years) Women (19-55 years)	√	√	√
14	Micronutrients intake	Madanijah et al. 2016a Madanijah et al. 2016b	Interview	Pre-pregnant women Pregnant women Lactating Women			√*
15	Iron supplementation	MOH 2013a, MOH 2013b	Interview	Women age 10-54 years	√	√	√

No.	Data	Source	Method	Target	N	D	W
16	Food micronutrient fortification (iodine)	MOH 2013a, MOH 2013b	Iodine rapid test Iodine titration method	Household	√	√	√
17	Vegetable and fruits consumption	MOH 2014a, MOH 2014b	Interview	13-55 years	√	√	
18	Key foods which comprise 75% of each nutrient intake	Statistics Indonesia 2016	Interview	Household	√	√	√
19	Food intakes per existing food groups	MOH 2014a, MOH 2014b	Interview	13-55 years	√	√	
20	PAL	MOH 2013a, MOH 2013b	Interview	≥10 years	√	√	√

Notes:

N=national, D=DKI Jakarta, W=West Java, *) only Bogor District

1. Basic Health Research 2013

Data regarding nutritional and health status were obtained from Basic Health Research (RISKESDAS) 2013. RISKESDAS is a regular community-based research in order to collect basic data and health indicators which represent conditions at national, province and down to district level. The research covers various scope of health indicators, namely access to health service, environmental health, communicable diseases, non communicable diseases, disability, reproductive health, nutritional status and blood examination. The research was conducted by National Institute of Health Research and Development, Ministry of Health of Republic of Indonesia. RISKESDAS 2013 was the third RISKESDAS after the 2007 and 2010. While the RISKESDAS 2010 was only representative for province level, in 2013, this cross sectional study included households in 33 provinces with 497 districts. The sampling was multistage cluster sampling, 1,027,763 household members coming from 294,959 households in 11,986 census blocks (MOH 2013a; MOH 2013b) were available for data analysis. Only 49,931 household members age ≥1 year (MOH 2013c) were available for analysis on blood sample.

Table 2 Sample distribution by age in RISKESDAS 2013

Age	Number of Population
15	9,611
16	9,197
17	8,899
18	7,845
19	6,396
20-24	31,082
25-29	35,402
30-34	42,723
35-39	42,924
40-44	42,107
45-49	36,370

Table 3 Number of population measured for nutritional status by category in RISKESDAS 2013

Category	Number of Population
Adolescent 16-18 years	53,194
Adult ≥18 years	649,625
WRA 15-49 years	272,556
Pregnant women	7,664

Table 4 Number of population measured for biomedical assessment in RISKESDAS 2013

Category	Number of Population
Hb	46,428
Blood Glucose	38,136
Lipid profile	35,609

Table 5 Number of population for non communicable diseases by category in RISKESDAS 2013

Category	Number of Population
Population age ≥15 years interviewed for DM, HBP, coronary heart disease, heart failure, stroke	722,329
Women age ≥15 years interviewed for DM, HBP, coronary heart disease, heart failure, stroke	374,506
Adult ≥18 years interviewed for HBP	665,920
Women ≥18 years interviewed for HBP	346,799
Adult ≥18 years measured for HBP	661,367
Women ≥18 years measured for HBP	344,750

Table 6 Number of population for PAL by category in RISKESDAS 2013

Category	Number of Population
Population age ≥10 years interviewed for PAL	835,258

Overall, data was presented at national and provincial level (DKI Jakarta and West Java). Some variables in the data were presented in categories such as region (urban and rural), occupation (unemployed, government/private employee, entrepreneur, farmer/fisherman/labor, and others), and wealth index.

The construction of the wealth index classification was first done using information on household's ownership of several indicative consumer items such as television and car; type of drinking water source; toilet facilities; and other characteristics related to wealth status provided by Susenas 2010. Each household asset is then assigned a weight or factor score generated through principal components analysis. Variable screening was conducted by eliminating variable with correlation value below 0.3 so that all variables had minimum correlation value of 0.3 and proportion explained above 0.5. As the result, 9 composite variables were obtained with proportion explained of 0.57 to determine the wealth quintiles of each household. This result was then crosstab analyzed with monthly expenditure, showing that the index had good sensitivity among the lowest income and the highest income households. The 9 composite variables constructed through the first process were added and combined with other 4 variables from RISKESDAS 2013, the 12 variables formed the final index. The variables were: 1) main source of drinking water, 2) fuel for cooking, 3) ownership of

latrine, 4) type of latrine, 5) availability of septic tank, 6) source of lighting, 7) motorcycle, TV, 9) water heater, 10) 12 kg LPG gas tube, 11) refrigerator, and 12) car. The result was than standardized to define wealth quintiles as: Lowest, Second, Middle, Fourth, and Highest.

Physical activity level (PAL) was assessed using Global Physical Activity Questionnaire (GPAQ) which was developed by WHO for physical activity surveillance (WHO 2012). The information covered 3 domains, namely activity at work, travel to and from places, and recreational activities. The GPAQ has been developed for face-to-face interviews conducted by trained interviewers. The instrument had been assessed for validity (Cleland et al. 2014).

2. Total Diet Study 2014

Food and nutrient intake data were taken from Total Diet Study (TDS) of Indonesia (MOH 2014a) and DKI Jakarta 2014 (MOH 2014b). TDS of West Java province has not been published yet. TDS was a cross sectional, observational, descriptive analytic study. It consisted of individual food consumption survey and analysis of food chemical contaminant. The study was conducted in all provinces and districts in Indonesia in 2014. In DKI Jakarta, the data was collected from May 23 – June 21, 2014.

Population for the individual food consumption survey was all households representing all provinces in Indonesia. Sample was all household visited and registered on RISKESDAS 2013 data. Three households (10%) in each census blocks were selected by systematic random sampling for a second visit to collect 1x24 hours food recall on non-consecutive days. Sample included in this study was 51,127 households from 2,080 census blocks in all provinces from households visited during RISKESDAS 2013.

Data were obtained by interview using household and individual questionnaire. Household questionnaire aimed to obtain information on food preparation process for family consumption, such as food source, preparation process before cooking, cooking method with cooking tools, and fuel used for cooking. Individual questionnaire aimed to obtain information on type and quantity (weight) of food being consumed by each household member, including individual beverages, seasoning, food supplements, sugar, salt, and oil consumptions. This questionnaire also included 24 hour recall. The questionnaire was formulated by experts in nutrition and health.

Total Diet Study used 24 hour recalls to generate food and nutrient intakes. This method is valid for actual intake of macronutrients but for some micronutrients intake it may result in underestimation, hence sodium intake level might be underestimated.

Table 7 Distribution of household member in TDS of Indonesia 2014 by age and sex

Age (years)	Male¹	Female¹	Total
13-18	8,830 (51.3)	8,398 (48.7)	17,228
19-55	44,494 (50.2)	44,140 (49.8)	88,634

Notes: n (%)

Table 8 Distribution of household member in TDS of DKI Jakarta 2014 by characteristics

Characteristics	Population
Women	795
Age group (years)	
13-18	184
19-55	882

3. Nutritional Status of Pre-pregnant, Pregnant and Lactating Women in Bogor District

Micronutrient intake data was taken from a cross sectional study conducted by Madanijah et.al. (2016a, 2016b) in six sub-districts of Bogor City. Data were collected between January and May 2011. The pre-pregnant (PPW), pregnant (PW), and lactating women (LW) were selected randomly from the records available at participating integrated community service posts (Pos Pelayanan Terpadu/POSYANDU) with equal representation out of the six sub-districts. Non-PW in the age group of 20–40 years, not suffering from any chronic disease affecting their dietary intake pattern and without any acute morbidity condition on the day of the survey, married and not committed to any form of family planning method or aware of any infertility were considered as women preparing for pregnancy and were recruited to the PPW group. Similarly, PW free from any disease either pregnancy related or non-pregnancy related with gestational age between 13 and <28 weeks were recruited to the PW group. LW between days 50 and 180 after delivery were recruited to the LW group. There were 200 PPW, 203 PW and 220 LW participated in the study.

Data were obtained using a semi-structured, close-ended questionnaire to elicit information on sociodemographic profile (age, education, occupation and family size), dietary intake and anthropometric profile. Validation was carried out during a pre-test with ten LW and PPW, after which the questionnaires and screening forms were finalised. A semi-quantitative FFQ was administered to assess frequency and amount of intake of different food groups during the past 1 week. Two daily dietary intake data sets were collected using the 24-h dietary recall method.

4. National Socio-Economic Survey 2016

Data on key foods which comprise 75% of energy and nutrient intakes were obtain from Book 2 of SUSENAS: Consumption of Calorie and Protein of Indonesian Population and Province. Since 2015, SUSENAS was conducted twice a year, in March and September. For this report, we used data collected in March 2016, which included 300,000 households at all region in Indonesia.

Data collection on selected household was conducted through direct interview with the household head or the husband/wife of the household head or household members who know the characteristics of the household interviewed in the questionnaire. Answers for Questions about individual members of the household were obtained directly from appropriate household member. Food consumption data were obtained by dietary history for the past one week.

5. Review on Studies among Women at the Workplace

There were only few studies among women in the workplace in Indonesia. Using Google Scholar advanced search engine with keywords (using Indonesian language) women worker, nutritional status, health status, and anemia with 10 year limitation, 65 relevant studies were found. These studies included bachelor thesis, thesis, dissertation, proceeding and journal articles. With consideration that journal articles were peer-reviewed, only 15 articles from journals are included in this review.

RESULTS

1. Identification of current health and nutrition status of women

1.1 Population size and socio-demographic status

Data on population was mainly taken from Statistics Indonesia, particularly Population Census 2010. Therefore, the data in 2015 was the projection from the census. Table 9 shows women population at national level. The data was consistently similar between the two sources since MOH was assisted by Statistics Indonesia for conducting projection to the census data.

Table 9 Population of women by age group at national level

Population	2010¹⁾ (000)	2015¹⁾ (000)	2015²⁾
Total	118,000.1	127,095.0	127,094,968
Age group (year)			
15-19	10 657.6	10 806.4	10,806,354
20-24	10 404.5	10 618.6	10,618,554
25-29	10 340.1	10 354.9	10,354,892
30-34	9 998.2	10 279.2	10,279,152
35-39	9 196.0	9 922.2	9,922,175
40-44	8 242.3	9 099.7	9,099,707
45-49	7 067.6	8 114.4	8,114,449

Source:

¹⁾ Statistics Indonesia 2013

²⁾ MOH 2016

Table 10 Population of women by age group in DKI Jakarta Province

Population	2010¹⁾ (000)	2015¹⁾ (000)	2015²⁾
Total	4,761.4	5,062.6	5,062,567
Age group (year)			
15-19	427.7	360.4	360 434
20-24	515.3	465.0	464 982
25-29	538.4	524.8	524 826
30-34	486.0	509.7	509 726
35-39	403.9	451.4	451 364
40-44	338.2	380.8	380 792
45-49	280.2	323.3	323 266

Source:

¹⁾ Statistics Indonesia 2013

²⁾ Statistics of DKI Jakarta Province 2016

Table 11 Population of women by age group in West Java Province

Population	2010¹⁾ (000)	2015¹⁾ (000)	2015²⁾
Total	21,271.8	23,028.6	23,028,642
Age group (year)			
15-19	1,964.6	2,025.1	2 076 704
20-24	1,895.5	1,979.5	2 003 571
25-29	1,876.5	1,906.6	1 940 780
30-34	1,836.8	1,882.1	1 939 614
35-39	1,676.8	1,839.1	1 836 541
40-44	1,461.2	1,670.0	1 642 867
45-49	1,221.2	1,446.3	1 397 871

Source:

¹⁾ Statistics Indonesia 2013

²⁾ Statistics of West Java Province 2016

Table 12 shows the population target for health development program in Indonesia 2015. Data on lactating women was derived from post-partum women.

Table 12 Population target for health development program in Indonesia 2015 at national level, DKI Jakarta, and West Java (12)

Category	National	DKI Jakarta	West Java
Children <1 year	4,749,791	181,401	877,626
WRA 15-49 years	69,195,283	3,015,390	12,749,261
Pregnant Women	5,382,779	196,901	979,472
Lactating Women [#]	5,138,107	187,951	934,950

[#]Population of lactating women is taken from post-partum women

Source: MOH 2016

1.2 Distribution and recent trends of the relevant health and nutrition status

1.2.1 BMI

Definition

In RISKESDAS 2013, the assessment of nutritional status among female was different for female adolescent and female adult. For the adolescent BMIZ (BMI-for-age Z-score) was used. The category of BMIZ in RISKESDAS 2013 is presented below.

Table 13 Category of BMIZ among female adolescent 16-18 years

Category	BMIZ
Severe CED	BMIZ < -3.0
CED	-3.0 ≤ BMIZ < -2.0
Normal	-2.0 ≤ BMIZ ≤ 1.0
Overweight	1.0 < BMIZ ≤ 2.0
Obese	BMIZ > 2.0

Nutritional status among adult was assessed using Body Mass Index (BMI). Table 14 shows the category of BMI applied in RISKESDAS 2013.

Table 14 Category of BMI among female adult ≥ 18 years

Category	BAZ
CED	BMI < -18.5
Normal	$18.5 \leq \text{BMI} < 25.0$
Overweight	$25.0 \leq \text{BMI} < 30.0$
Obese	BMI ≥ 30.0

Results

Data on BMIZ among female adolescent was only available at national level. The only available data on provincial level was for adolescent age 16-18 years without segregation into male and female category. Table 15, 16 and 17 show the distribution at national level, DKI Jakarta, and West Java, respectively. The proportion of both undernutrition and overnutrition in DKI Jakarta was higher than at national level.

Table 15 Distribution of BMIZ among adolescent 16-18 years at national level (%)

Population	Severe CED	CED	Normal	Overweight	Obese
Adolescent 16-18 yrs	1.9	7.5	83.2	5.7	1.6
Adolescent girls 16-18 yrs	1.0	4.7	86.2	6.4	1.7

Table 16 Distribution of BMIZ among adolescent 16-18 years in DKI Jakarta (%)

Population	Severe CED	CED	Normal	Overweight	Obese
Adolescent 16-18 yrs	2.3	8.8	77.4	7.3	4.2

Table 17 Distribution of BMIZ among adolescent 16-18 years in West Java (%)

Population	Severe CED	CED	Normal	Overweight	Obese
Adolescent 16-18 yrs	1.4	7.7	83.4	6.2	1.4

Differ from the adolescents age group, prevalence of CED among adult ≥ 18 years in DKI Jakarta was lower than national level and West Java. However, the condition was different in prevalence of overweight and obese, which was much higher in DKI Jakarta than the national and West Java prevalence.

Table 18 Distribution of BMI among adult ≥ 18 years at national level (%)

Population	CED	Normal	Overweight	Obese
Adult ≥ 18 years	11.1	62.7	11.5	14.8

Table 19 Distribution of BMI among adult ≥ 18 years in DKI Jakarta (%)

Population	CED	Normal	Overweight	Obese
Adult ≥ 18 years	9.3	55.8	14.0	20.8

Table 20 Distribution of BMI among adult ≥ 18 years in West Java (%)

Population	CED	Normal	Overweight	Obese
Adult ≥ 18 years	11.0	62.1	11.7	15.2

CED among adult age 18-19 years was 24.5%, the highest among any other adult age group. There was a tendency of decline in the prevalence of CED in older age group. While for overweight and obesity in adult women the prevalence was increasing along

with age. Overnutrition was found to be more prevalent in urban than rural areas, while undernutrition was in reverse. There was a tendency that the decreasing prevalence of CED and concomitantly increasing prevalence of overweight and obese were in line with improved household wealth.

Table 21 Distribution of BMI among adult women ≥18 years by characteristics at national level (%)

Characteristics	CED	Normal	Overweight	Obese
Adult women ≥18 yrs	10.1	57.0	12.9	20.0
Age group (year)				
18-19	24.5	66.0	4.0	5.5
20-24	16.5	67.0	7.0	9.4
25-29	8.9	64.2	11.2	15.7
30-34	5.8	57.7	14.5	22.0
35-39	4.9	53.0	16.2	25.9
40-44	4.6	50.9	16.9	27.5
45-49	5.7	50.0	16.7	27.6
Occupation				
Unemployed	10.5	55.5	13.2	20.8
Government/private employee	8.6	59.3	12.6	19.5
Entrepreneur	5.8	52.0	14.8	27.5
Farmer/fisherman/labor	11.7	62.4	11.8	14.2
Others	9.9	56.2	13.0	20.9
Region				
Urban	8.7	54.1	13.8	23.4
Rural	11.5	60.0	12.1	16.4
Wealth Index				
1	16.4	63.6	9.6	10.4
2	12.3	59.9	11.3	16.4
3	10.0	57.3	13.3	19.4
4	7.9	53.4	14.6	24.0
5	6.2	53.7	14.5	25.6

1.2.2 Chronic Energy Deficiency (CED)

Definition

RISKESDAS 2013 collected data on mid-upper arm circumference (MUAC) to categorize CED (MUAC <23.5 cm). The assessment was conducted to both pregnant and non pregnant WRA 15-49 years and the data was available for all levels (national, DKI Jakarta, and West Java).

Results

Prevalence of CED among pregnant women was higher than that of non pregnant women. This condition was found at national level, DKI Jakarta, and West Java.

Table 22 Distribution of CED among WRA 15-49 years at national level (%)

Population	CED (MUAC<23.5 cm)	
	Pregnant	Non pregnant
WRA 15-49 yrs	24.2	20.8

Table 23 Distribution of CED among WRA 15-49 years in DKI Jakarta (%)

Population	CED (MUAC<23.5 cm)	
	Pregnant	Non pregnant
WRA 15-49 yrs	17.6	14.8

Table 24 Distribution of CED among WRA 15-49 years in West Java (%)

Population	CED (MUAC<23.5 cm)	
	Pregnant	Non pregnant
WRA 15-49 yrs	21.6	19.9

Inverse with increased age, there was a tendency that prevalence of CED among both pregnant and non pregnant women reduced in older age group. The prevalence also tended to be higher among pregnant women compared to non pregnant women. Some exclusions were; in adolescent girls (15-19 years) and among the age group of 20-24 years. In female adolescent (15-19 years) higher prevalence of CED among non pregnant women was found compared to pregnant women in the same age group. Among the age group of 20-24 years, the prevalence of CED was relatively similar between pregnant and non pregnant women.

In term of location, the prevalence of CED was higher in rural than urban area. The prevalence was more prominent in lower income index. Among pregnant women, the prevalence in the lowest income index was almost twice as the prevalence in the highest (37.1% compared to 20.2%) and for non pregnant women there was more than 10% difference (28.1% compared to 17.1%) in lowest income and the highest respectively.

Table 25 Distribution of CED among WRA 15-49 years by characteristics at national level (%)

Characteristics	CED (MUAC<23.5 cm)	
	Pregnant	Non pregnant
Age group (year)		
15-19	38.5	46.6
20-24	30.1	30.6
25-29	20.9	19.3
30-34	21.4	13.6
35-39	17.3	11.3
40-44	17.6	10.7
45-49	20.7	11.8
Occupation		
Unemployed	24.7	23.1
Government/private employee	20.7	18.8
Entrepreneur	18.6	12.1
Farmer/fisherman/labor	27.9	19.5
Others	24.7	18.7

Characteristics	CED (MUAC<23.5 cm)	
	Pregnant	Non pregnant
Region		
Urban	22.4	19.7
Rural	26.4	22.1
Wealth Index		
1	37.1	28.1
2	25.3	22.5
3	23.5	21.1
4	21.8	18.9
5	20.2	17.1

1.2.3 Body height of pregnant women

Definition

High risk pregnancy among pregnant women was indicated by body height (BH), since pregnant women with short stature (< 150 cm) are prone to experience high risk pregnancy. The data was only available at national level.

Results

The prevalence of pregnant women with short stature was 31.3%. Rural area had much higher prevalence compared to urban area. The improvement of wealth tend to decrease prevalence. The prevalence in the wealthiest group is almost half of those in the poorest. (quintile 5 vs quintile 1).

Table 26 Distribution of high risk pregnancy among pregnant women by characteristics at national level (%)

Characteristics	High risk (BH<150 cm)
Pregnant women	31.3
Occupation	
Unemployed	32.4
Government/private employee	20.4
Entrepreneur	30.1
Farmer/fisherman/labor	35.4
Others	31.2
Region	
Urban	28.0
Rural	35.1
Wealth Index	
1	40.1
2	35.5
3	35.7
4	29.3
5	22.0

1.2.4 Anemia and Iron Deficiency Anemia (IDA)

Definition

RISKESDAS 2013 defined that anemia was condition of Hb level less than normal value, which was 12.0 g/dl for non pregnant WRA and 11.0 g/dl for pregnant women. Hb was assessed using Hemocue HB 201+ as part of biomedical assessment of RISKESDAS 2013. Since biomedical assessment was only representative for national level, only data at national level was available. Table 27 shows the classification of public health significance for anemia based on WHO 2008.

Table 27 Classification of anemia as a problem of public health significance

Prevalence of anemia (%)	Category
≥40.0	Severe public health problem
≥20.0-39.9	Moderate public health problem
5.0-19.9	Mild public health problem
≤4.9	Not public health problem

Results

Prevalence of anemia among women at national level was 23.9% and categorized as moderate public health problem according to the cut-off values of WHO 2008. The prevalence among adolescent girls and women of reproductive age (WRA) was both 22.7%, while the highest prevalence was observed among pregnant women (37.1%). According to the area, the prevalence was higher in rural than urban area.

Table 28 Distribution of anemia among women

Population	National	Urban	Rural
Women	23.9	NA	NA
Adolescent girls 13-18 yrs	22.7	NA	NA
WRA 15-49 years	22.7	22.4	23.0
Pregnant women	37.1	36.4	37.8

Notes:

NA No available data

Prevalence of anemia was consistently lowered by improvement of income. The public health significance of anemia in the fourth wealth index is considered as mild based on WHO cut off, changing from moderate public health problem.

Table 29 Distribution of anemia among population age ≥1 year at national level (%)

Characteristics	Anemia
Age group (year)	
15-24	18.4
25-34	16.9
35-44	18.3
45-54	20.1
Wealth Index	
1	27.9

Characteristics	Anemia
2	21.8
3	21.2
4	19.8
5	19.4

1.2.5 High Blood Pressure (HBP)

Definition

RISKESDAS 2013 referred the definition of HBP to JNC VII 2003 diagnosis criteria i.e. systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg. The JNC VII 2003 criteria is only acceptable for adult age ≥ 18 years old. Therefore in Basic Health Research 2013, the prevalence of HBP was generated based on blood pressure measurement of people age ≥ 18 years old, although those age 15-17 years old were also measured. The blood pressure was measured by automatic digital sphygmomanometer Omron type IA1.

Results

Prevalence of High Blood Pressure (HBP) at national level was 25.8%, and was 29.4% in West Java and 20.0% in DKI Jakarta. The prevalence in West Java was higher than national prevalence and it was the fourth highest among all provinces (MOH 2013a; MOH 2013b). The prevalence was higher among women than men.

Table 30 Distribution of HBP among adult ≥ 18 years at national level (%)

Population	D	D/O	U
Adult ≥ 18 years	9.4	9.5	25.8
Adult women ≥ 18 years	12.2	12.3	28.8

Notes:

- D Diagnosed by health personnel
- D/O Diagnosed by health personnel or taking medication
- U Measured

Table 31 Distribution of HBP among adult ≥ 18 years in DKI Jakarta (%)

Population	D	D/O	U
Adult ≥ 18 years	10.0	10.1	20.0

Notes:

- D Diagnosed by health personnel
- D/O Diagnosed by health personnel or taking medication
- U Measured

Table 32 Distribution of HBP among adult ≥ 18 years in West Java (%)

Population	D	D/O	U
Adult ≥ 18 years	10.5	10.6	29.4

Notes:

- D Diagnosed by health personnel
- D/O Diagnosed by health personnel or taking medication
- U Measured

The prevalence of HBP was higher in higher age groups and in urban area, while the prevalence was almost similar across wealth indices.

Table 33 Distribution of hypertension among adult ≥ 18 years by characteristics at national level (%)

Characteristics	D	D/O	U
Age group (year)			
15-24	1.2	1.2	8.7
25-24	3.4	3.4	14.7
25-34	8.1	8.2	24.8
45-54	14.8	15.0	35.6
Occupation			
Unemployed	12.4	12.5	29.2
Government/private employee	6.3	6.4	20.6
Entrepreneur	8.5	8.6	24.7
Farmer/fisherman/labor	7.8	7.8	25.0
Others	8.8	8.9	24.1
Region			
Urban	9.9	10.0	26.1
Rural	8.8	8.9	25.5
Wealth Index			
1	8.4	8.5	25.5
2	9.6	9.7	27.2
3	9.6	9.7	25.9
4	9.6	9.7	25.1
5	9.4	9.5	25.4

Notes:

D Diagnosed by health personnel

D/O Diagnosed by health personnel or taking medication

U Measured

1.2.6 Diabetes mellitus

Definition

Diabetes mellitus (DM) was defined by measurement of random plasma glucose, fasting plasma glucose, and post-prandial plasma glucose. The present of Impaired fasting glucose and impaired glucose tolerance was also defined. The category was based on ADA 2011 as reference and is presented in Table 34. Blood glucose assessment was part of biomedical assessment in Riskesdas, representative only at national level.

Table 34 Category of blood glucose

Category	Definition
DM	Random plasma glucose ≥ 200 mg/dl plus 4 pathognomonic symptoms of DM are present (polyphagia, polyuria, polydipsia and weight loss)
	Fasting plasma glucose ≥ 126 mg/dl plus 4 pathognomonic symptoms of DM are present

Category	Definition
	Post-prandial plasma glucose ≥ 200 mg/dl and/or 4 pathognomonic symptoms of DM not all present
Impaired fasting glucose (IFG)	Fasting plasma glucose 100-125 mg/dl
Impaired glucose tolerance (IGT)	Post-prandial plasma glucose 140-199 mg/dl

Results

Prevalence of Diabetes Mellitus (DM) was 6.9 % at national level, while the prevalence of intermediate hyper glycaemia was 29.9% for Impaired Glucose Tolerance (IGT) and 36.6% for Impaired Fasting Glucose (IFG). These prevalences were higher among women: 7.7% for DM and 32.7% for IGT and increased along with ages.

Table 35 Distribution of DM, IFG and IGT among population age >15 years (%)

Population	DM (%)	IFG (%)	IGT (%)
National	6.9	36.6	29.9
Women	7.7	34.4	32.7
Age group (year)			
15-24	1.1	26.2	17.6
25-34	2.7	28.3	26.4
35-44	6.1	35.3	30.7
45-54	9.7	41.8	33.6

1.2.7 Hyperlipidemia

Definition

Lipid assessment was included in biomedical assessment, representative only at national level. Prevalence of hyperlipidemia was classified by lipoprotein levels of total cholesterol, HDL, LDL and Triglycerides (TG) based on NCEP ATP III (2001).

Table 36 Definition of lipid profile

Category	Definition
Abnormal total cholesterol	individual age ≥ 15 years examined by auto analyzer TRX 7010 and based on NCEP ATP III (2001), the cholesterol level above 199 mg/dl (borderline 200-239 mg/dl and high ≥ 240 mg/dl).
Inoptimal LDL	individual age ≥ 15 years examined by auto analyzer TRX 7010 and based on NCEP ATP III (2001), the LDL level above 99 mg/dl (near optimal 100-129 mg/dl, high borderline 130-159 mg/dl, high 160-189 mg/dl, very high ≥ 190 mg/dl).
Low HDL	individual age ≥ 15 years examined by auto analyzer TRX 7010 and based on NCEP ATP III (2001) the HDL level below 40 mg/dl.
Abnormal triglyceride	individual age ≥ 15 years examined by auto analyzer TRX 7010 and based on NCEP ATP III (2001), the triglyceride level above 149 mg/dl (high borderline 150-199 mg/dl, high 200-499 mg/dl, very high ≥ 500 mg/dl).

Results

Prevalence of high total cholesterol among population age ≥ 15 years at national level was 10.1%, while 25.8% of the population was in the borderline. The prevalence was higher among women (11.8%) and in urban area (11.7%). As age increased, the prevalence was higher in both borderline and high total cholesterol. Similarly, as wealth improved the prevalence of abnormal cholesterol increased.

Table 37 Distribution of abnormal total cholesterol among population age ≥ 15 years at national level (%)

Characteristics	Borderline	High
Population age ≥ 15 years	25.8	10.1
Women ≥ 15 years	27.8	11.8
Age group (year)		
15-24	11.5	2.3
25-34	19.5	5.9
35-44	26.8	8.6
45-54	31.9	14.3
Occupation		
Unemployed	25.5	10.9
Government/private employee	29.4	11.1
Entrepreneur	28.6	11.3
Farmer/fisherman/labor	23.7	7.8
Others	25.5	12.3
Region		
Urban	27.8	11.7
Rural	23.7	8.4
Wealth Index		
1	20.7	6.3
2	24.0	8.2
3	24.4	9.6
4	27.2	11.1
5	31.1	14.2

Prevalence of low HDL among population age ≥ 15 years at national level was 22.9%, and was lower among women (15.3%). The prevalence was relatively similar among age groups and occupations. In rural area, the prevalence of low HDL was found higher than urban (2.4% vs 21.5%). The distribution show that the prevalence was lower in higher economic status.

Table 38 Distribution of low HDL among population age ≥ 15 years at national level (%)

Characteristics	Low (HDL<40 mg/dl)
Age ≥ 15 years	22.9
Women ≥ 15 years	15.3
Age group (year)	
15-24	22.5
25-34	22.8
35-44	23.8
45-54	23.1
Occupation	
Unemployed	19.1
Government/private employee	26.6
Entrepreneur	25.8
Farmer/fisherman/labor	25.8
Others	25.6
Region	
Urban	21.5
Rural	24.4
Wealth Index	
1	29.9
2	23.5
3	21.2
4	21.6
5	20.7

Non-optimal LDL was found approximately in 76% of the population age ≥ 15 years at national level. In terms of very high and high LDL, women have relatively high prevalences (5.7 and 11.9%, respectively) compared to the national data of all sexes (4.8 and 11.1%). As age increased, the prevalence of inoptimal LDL was also raised. There was also a tendency that the problem was found more in urban area and among more wealthy people.

Table 39 Distribution of inoptimal LDL among population age ≥ 15 years at national level (%)

Characteristics	Near optimal	High Borderline	High	Very high
Age ≥ 15 years	34.3	26.0	11.1	4.8
Women ≥ 15 years	34.0	26.9	11.9	5.7
Age group (year)				
15-24	34.7	12.8	3.6	0.9
25-34	39.0	22.2	7.8	2.6
35-44	36.6	28.2	10.2	4.1
45-54	32.0	30.9	14.6	6.9

Characteristics	Near optimal	High Borderline	High	Very high
Occupation				
Unemployed	33.2	24.7	11.2	5.4
Government/private employee	33.4	29.7	12.0	4.7
Entrepreneur	34.0	28.4	13.2	5.3
Farmer/fisherman/labor	36.6	25.2	9.9	3.6
Others	32.3	29.3	11.4	5.8
Region				
Urban	33.1	26.7	12.4	5.5
Rural	35.4	25.3	9.9	4.1
Wealth Index				
1	36.3	22.3	9.0	3.0
2	35.5	25.0	9.8	3.6
3	34.8	26.4	9.9	4.7
4	33.9	26.2	11.5	5.7
5	31.3	29.0	15.1	6.3

Abnormal TG was found approximately in 25% of the population age ≥ 15 years at national level. The prevalence among women was approximately 22%. The prevalence of abnormal TG was higher in urban than rural area. As age increased, the prevalence also increased. Although there was no type of abnormal TG characteristic among types of occupations and among wealth levels, there was tendency that the prevalence was higher along with increased income.

Table 40 Distribution of abnormal TG among population aged ≥ 15 years at national level (%)

Characteristics	High Borderline	High	Very High
Age ≥ 15 years	13.0	11.4	0.5
Women ≥ 15 years	11.7	9.8	0.4
Age group (year)			
15-24	8.8	5.2	0.2
25-34	10.8	9.4	0.3
35-44	12.6	11.4	0.6
45-54	15.3	14.8	0.8
Occupation			
Unemployed	11.5	10.2	0.4
Government/private employee	15.6	15.6	0.9
Entrepreneur	14.3	14.4	0.7
Farmer/fisherman/labor	14.0	10.4	0.5
Others	13.2	12.6	0.5
Region			
Urban	13.1	12.5	0.7
Rural	12.9	10.3	0.3

Wealth Index			
1	11.6	9.2	0.3
2	12.7	9.3	0.3
3	12.8	10.9	0.5
4	13.4	12.3	0.6
5	14.3	14.6	0.8

1.2.8 Coronary Heart Disease, Heart Failure, and Stroke

Definition

Data was obtained from interview of subject age ≥ 15 years using questionnaires. Distribution of coronary heart disease, heart failure and stroke was calculated based on those who were diagnosed by doctor/health personnel or experiencing the symptoms.

Results

The prevalence of coronary heart disease, heart failure and stroke based on doctor's diagnosis at national level among adult and adult women age ≥ 15 years was 0.5, 0.1, 7.0%, respectively. The highest prevalence of those diseases was observed among the age group 45-54 years old.

Table 41 Distribution of coronary heart disease, heart failure and stroke among adult ≥ 15 years at national level (%)

Population	CHD		Heart Failure		Stroke (‰)	
	D	D/G	D	D/G	D	D/G
Adult ≥ 15 years	0.5	1.5	0.13	0.3	7.0	12.1
Adult women ≥ 15 years	0.5	1.6	0.20	0.3	6.8	12.1

Notes:

D Diagnosed by doctor

D/G Diagnosed by doctor or health personnel or the symptom

Table 42 Distribution of coronary heart disease, heart failure and stroke among adult ≥ 15 years in DKI Jakarta (%)

Population	CHD		Heart Failure		Stroke (‰)	
	D	D/G	D	D/G	D	D/G
Adult ≥ 15 years	0.7	1.6	0.15	0.3	9.7	14.6

Notes:

D Diagnosed by doctor

D/G Diagnosed by doctor or health personnel or the symptom

Table 43 Distribution of coronary heart disease, heart failure and stroke among adult ≥ 15 years in West Java (%)

Population	CHD		Heart Failure		Stroke (‰)	
	D	D/G	D	D/G	D	D/G
Adult ≥ 15 years	0.5	1.6	0.14	0.3	6.6	12.0

Notes:

D Diagnosed by doctor

D/G Diagnosed by doctor or health personnel or the symptom

Table 44 Distribution of coronary heart disease, heart failure and stroke among adult ≥ 15 years by characteristics (%)

Characteristics	CHD		Heart Failure		Stroke (‰)	
	D	D/G	D	D/G	D	D/G
Age group (year)						
15-24	0.1	0.7	0.0	0.1	0.2	2.6
25-34	0.2	0.9	0.1	0.1	0.6	3.9
35-44	0.3	1.3	0.1	0.2	2.5	6.4
45-54	0.7	2.1	0.2	0.4	10.4	16.7
Occupation						
Unemployed	0.7	1.6	0.2	0.4	11.4	18.0
Government/private employee	0.4	0.9	0.1	0.1	3.9	6.2
Entrepreneur	0.5	1.2	0.1	0.3	4.6	8.6
Farmer/fisherman/labor	0.3	1.6	0.1	0.3	3.7	8.8
Others	0.4	1.3	0.1	0.3	5.8	10.0
Region						
Urban	0.6	1.4	0.2	0.3	8.2	12.7
Rural	0.4	1.6	0.1	0.3	5.7	11.4
Wealth Index						
1	0.2	2.1	0.1	0.4	5.1	13.1
2	0.4	1.6	0.1	0.3	6.9	12.6
3	0.5	1.4	0.1	0.3	6.9	12.0
4	0.6	1.3	0.1	0.2	7.6	11.8
5	0.7	1.2	0.2	0.2	7.7	11.2

Notes:

D Diagnosed by doctor

D/G Diagnosed by doctor or health personnel or the symptom

1.2.9 Kidney and Joint Disease

Definition

Data was obtained via interview to subject age ≥ 15 years using questionnaire. Distribution of kidney disease was calculated based on those who were diagnosed by doctor. Distribution of joint disease was calculated based on those who were diagnosed by health personnel or experiencing the symptoms.

Results

Chronic kidney disease and kidney stone based on doctor's diagnosis were rarely identified among people ≥ 15 years at national level (0.2 and 0.6%, respectively). On the other hand, joint disease diagnosed by doctors was more frequently observed at national level (11.9%), and the highest prevalence was in West Java (17.5%).

Table 45 Distribution of chronic kidney disease, kidney stone and joint disease among population ≥15 years at national, DKI Jakarta and West Java (%)

Level	Chronic Kidney Disease	Kidney Stone	Joint Disease	
	D*	D*	D**	D/G
National	0.2	0.6	11.9	24.7
DKI Jakarta	0.1	0.5	8.9	21.8
West Java	0.3	0.8	17.5	32.1

Notes:

D* Diagnosed by doctor

D** Diagnosed by health personnel

D/G Diagnosed by health personnel or the symptom

Table 46 Distribution of chronic kidney disease, kidney stone and joint disease among population ≥15 years by characteristics (%)

Characteristics	Chronic Kidney Disease	Kidney Stone	Joint Disease	
	D*	D*	D**	D/G
Age group (year)				
15-24	0.1	0.1	1.5	7.0
25-34	0.1	0.3	6.0	16.1
35-44	0.3	0.7	12.4	26.9
45-54	0.4	1.0	19.3	37.2
Women	0.2	0.4	13.4	27.5
Occupation				
Unemployed	0.2	0.5	11.5	23.4
Government/private employee	0.2	0.7	6.3	15.4
Entrepreneur	0.3	0.8	11.1	23.7
Farmer/fisherman/labor	0.3	0.7	15.3	31.2
Others	0.3	0.6	11.0	24.0
Region				
Urban	0.2	0.6	10.0	22.1
Rural	0.3	0.6	13.8	27.4
Wealth Index				
1	0.3	0.5	15.4	32.1
2	0.3	0.6	14.5	29.0
3	0.2	0.6	12.3	25.4
4	0.2	0.6	10.1	22.0
5	0.2	0.6	8.6	18.1

Notes:

D* Diagnosed by doctor

D** Diagnosed by health personnel

D/G Diagnosed by health personnel or the symptom

1.3 Food and nutrient intakes

1.3.1 Total Energy, Protein, Fat and Carbohydrate intakes

Total diet study in DKI Jakarta reported a significant disparities in energy and protein intake among the population (Table 47). For energy, 28.8% of the total population consumed <70% RDA while 12.4% consumed >130% RDA. For adolescents (age 13-18 years), 22.6% consumed <70% RDA while 21.3% consumed >130% RDA. For adults (age 19-55 years), 32.8% consumed <70% RDA while 8.2% consumed >130% RDA. For protein, 21.7% of the total population consumed <80% RDA while 45.8% consumed >120% RDA. For adolescents (age 13-18 years), 27.1% consumed <80% RDA while 34.2% consumed >120% RDA. For adults (age 19-55 years), 19.3% consumed <80% RDA while 47.7% consumed >120% RDA. Considering such disparities, we judged that it is difficult to discuss the adequacy of energy and protein intake among population using the average intake value (Table 48).

For fat, average intake is used, as data on disparities was not available. Fat intake of WRA (age 19-55 years) at national, DKI Jakarta and West Java was 49.9g, 69.7g and 55.1g respectively, while Indonesian RDA for women age 19-29 years is 75g and that for age 30-49 years is 60g. Fat intake of adolescent girls (age 13-18 years) at national, DKI Jakarta and West Java was 54.0g, 83.3g and 60.3g respectively, while Indonesian RDA for adolescent girls age 13-15 years and 16-18 years are 71g. It should be noted that Indonesian fat RDA for adolescent girls (both age 13-15 years and 16-18 years) is set to contribute to 30.1% of total energy intake and the percentage of fat to total energy intake for adolescent girls in DKI Jakarta was around 39%.

Table 47 Proportion (%) of adolescent and adult by energy and protein adequacy level in DKI Jakarta

Adequacy level	Adolescent (13-18 years old)	Adult (19-55 years old)
Energy		
<70% RDA	22.6	32.8
70 - <100% RDA	40.0	37.2
100 - <130% RDA	16.1	21.8
≥130% RDA	21.3	8.2
Protein		
<80% RDA	27.1	19.3
80 - <100% RDA	19.4	15.3
100 - <120% RDA	19.4	17.8
≥120% RDA	34.2	47.7

Source: MOH 2014b

Table 48 Total energy, protein, fat and carbohydrate intakes of adolescent girls and women of reproductive age at national, DKI Jakarta and West Java

Target/Population	National ¹⁾	DKI Jakarta ²⁾	West Java ¹⁾
Adolescent Girls			
Total energy, kcal/day	1,560 ± 626	1,916 ± 566	1,590 ± 700
Protein, g/day	56.0 ± 29.5	65.4 ± 24.9	52.0 ± 26.3
Fat, g/day	54.0 ± 36.8	83.3 ± 48.8	60.3 ± 38.0
Carbohydrate, g/day	219.4 ± 94.4	242.8 ± 85.0	217.6 ± 103.4

Target/Population	National ¹⁾	DKI Jakarta ²⁾	West Java ¹⁾
WRA			
Total energy, kcal/day	1,566 ± 608	1,788 ± 644	1,569 ± 625
Protein, g/day	59.2 ± 29.8	67.4 ± 30.7	55.7 ± 26.8
Fat, g/day	49.9 ± 33.9	69.7 ± 40.2	55.1 ± 35.7
Carbohydrate, g/day	226.0 ± 93.5	232.8 ± 91.3	220.7 ± 93.7

Notes: Adolescent girls are all women age 13-18 years old. WRA are all women age 19-55 years old

Sources:

¹⁾ MOH 2014a

²⁾ MOH 2014b

1.3.2 Salt and sodium intake

According to Balance Nutritional Guidelines, we should limit salt consumption to 1 teaspoon a day or 5 g. The salt intake of adolescents and adults in DKI Jakarta was still below the limit (Table 49).

Table 49 Salt intakes (g/day) of adolescent and adult at national, DKI Jakarta and West Java

Target/Population	National	DKI Jakarta	West Java
Adolescent (13-18 years old)	NA	3.4 ± 2.6	NA
Adult (19-55 years old)	NA	3.7 ± 2.8	NA

Notes: We only have data per age group from the source. There is no data differentiating men and women per age group for salt intakes. No data available for national and West Java.

Source: MOH 2014b

Based on Balance Nutritional Guidelines, sodium intakes should be limited to 2000 mg a day. Sodium intakes of adolescent girls at national and West Java and WRA at national, DKI Jakarta and West Java were still below the limit (Table 50). An exclusion was sodium intake of adolescent girls in DKI Jakarta which was higher than the limit, as Table 51 shows that almost half of adolescent in DKI Jakarta (41.7%) consumed sodium >2000 mg/day.

Table 50 Sodium intakes (mg/day) of adolescent girls and women of reproductive age at national, DKI Jakarta and West Java

Target/Population	National ¹⁾	DKI Jakarta ²⁾	West Jawa ¹⁾
Adolescent Girls	1,458 ± 2,025	2,105 ± 1,775	1,815 ± 1,560
Women of Reproductive Age: WRA	1,194 ± 1,688	1,520 ± 1,381	1,592 ± 1,744

Notes: Adolescent girls are all women age 13-18 years old. WRA are all women age 19-55 years old. Sodium intakes were obtained from salt added to the meal, salted fish and package food.

Sources:

¹⁾ MOH 2014a

²⁾ MOH 2014b

Table 51 Proportion (%) of adolescents and adults consuming sodium >2000 mg/day at national, DKI Jakarta and West Java

Target/Population	National ¹⁾	DKI Jakarta ²⁾	West Java
Adolescent (13-18 years old)	25.9	41.7	NA
Adult (19-55 years old)	18.0	25.8	NA

Sources:

¹⁾ MOH 2014a

²⁾ MOH 2014b

1.3.3 Micronutrients intake

1.3.3.1 Micronutrient intake

For micronutrient intake of women, we referred to a cross sectional study conducted by Madanijah et.al. (2016a, 2016b) in six sub-districts of Bogor Municipality, as there is no national level data available. The authors of the study used 77% of RDA as the cutoff point for vitamins and minerals intake, which is common practice in Indonesia, and intake below that level is defined as 'inadequate intake'. For iron and Vitamin C, the median intake of pre-pregnant women (PPW), pregnant women (PW) and lactating women (LW) of all household expenditure quintiles (HEQ) in Bogor were below the cutoff point. For Vitamin A, the median intake among all PPW, PW and LW except PPW of HHEQ-4 (highest household expenditure group) was below the cutoff point. For calcium and zinc, overall, median intake of lower household expenditures groups were below the cutoff point.

Table 52 Micronutrients intakes (Iron, Calcium, Zinc, Vitamin A and Vitamin C) of pre-pregnant women (PPW), pregnant women (PW) and lactating women (LW) in Bogor District across socio-economic layers

Target/Population	HHEQ-2	HHEQ-3	HHEQ-4
Pre-pregnant women ^{1) 2)}			
Iron (mg)	15 (11; 19)	16 (13; 21)	17 (12; 24)
Calcium (mg)	453 (254; 574)	485 (362; 733)	587 (346; 942)
Zinc (mg)	9 (5; 13)	11 (8; 16)	11 (7; 17)
Vitamin A (RE)	207 (66; 410)	216 (66; 528)	438 (185; 738)
Vitamin C (mg)	8 (3; 19)	12 (3; 38)	14 (8; 39)
Pregnant women ¹⁾			
Iron (mg)	15 (11; 24)	16 (10; 22)	15 (10; 22)
Calcium (mg)	606 (326; 788)	610 (361; 1042)	869 (662; 1242)
Zinc (mg)	10 (6; 17)	10 (8; 14)	11 (8; 18)
Vitamin A (RE)	370 (148; 638)	519 (118; 745)	538 (338; 859)
Vitamin C (mg)	13 (5; 44)	20 (9; 48)	22 (10; 40)
Lactating women ²⁾			
Iron (mg)	20 (14; 25)	21 (16; 27)	19 (14; 29)
Calcium (mg)	558 (437; 768)	617 (421; 944)	803 (542; 1092)
Zinc (mg)	10 (6; 16)	13 (7; 18)	12 (8; 17)
Vitamin A (RE)	432 (162; 733)	421 (137; 691)	517 (258; 891)
Vitamin C (mg)	18 (7; 53)	20 (8; 41)	36 (16; 94)

Notes: Bogor district household expenditure quintiles (HHEQ): HHEQ-2: 250 000–330 000, HHEQ-3: 330 000 –430 000 and HHEQ-4: 430 000 – 620 000 IDR/cap per month (Susenas of West Java 2009). These levels mainly cover the wider 'middle-income' group, representing 60% of the households in Bogor district: HHEQ-2, clearly lower middle income and HHEQ-4, clearly higher middle income. Data are presented in median (interquartile range/IQR)

Sources:

¹⁾ Madanijah 2016a

²⁾ Madanijah 2016b

1.3.3.2 Iron supplementation

The coverage of iron supplementation during pregnancy was around 90% at national, DKI Jakarta and West Java, while only less than half consumed it at least for 90 days or more.

Table 53 Distribution of iron supplement and days of consumption during pregnancy at national, DKI Jakarta and West Java (%)

Level	Iron supplement consumption*		Days of consumption**		
	Yes	No	90+	<90	Forget
National	89.1	10.9	33.3	34.4	21.4
DKI Jakarta	90.5	9.5	43.7	22.0	24.8
West Java	89.9	10.1	39.8	31.4	18.7

Notes: *) iron supplement form can be pill/tablet/caplet, syrup, etc

**) days of consumption refers to respondents who consumed iron supplement ('yes' column)

1.3.3.3 Food micronutrient fortification

Existing mandatory nutrient fortifications in Indonesia are iodine in salt, iron in wheat flour, folic acid and B vitamins in wheat flour, and zinc in wheat flour. Among those, only data on iodine fortification in salt was available in RISKE 2013 in which examination by titration method was conducted for the salt used in the households. Less than half of the households consumed salt with adequate iodine level (30 ppm). Fortification of vitamin A in unbranded cooking oil is scheduled to be launched in 2019.

Only data on iodine fortification was available from RISKESDAS 2013.

Table 54 Distribution of household consuming iodized salt based on rapid test at national, DKI Jakarta and West Java

Level	Iodine in salt		
	Adequate	Inadequate	None
National	77.1	14.8	8.1
DKI Jakarta	83.9	12.6	3.5
West Java	68.6	20.5	10.9

Table 55 Distribution of iodine level (ppm KIO₃) in household salt by titration method from RISKESDAS 2007 and 2013

Iodine level	2007	2013
None	7.8	1.0
Inadequate	67.7	50.8
Adequate	23.4	43.2
In excess	1.1	5.0
Mean ± SD	38.9 ± 28.3	34.1 ± 25.1

Based on Indonesian National Standard, salt should be fortified with 30 ppm iodine. Based on RISKESDAS 2013 (Table 53), there were less than half of household salt contained adequate iodine level.

1.3.4 Vegetable and fruits consumption

Table 56 Vegetable consumption (g/day) of adolescent and adult at national, DKI Jakarta and West Java

Target/Population	National ¹⁾	DKI Jakarta ²⁾	West Java
Adolescent (13-18 years old)			
Leaf vegetables	45.6 ± 55.9	37.27 ± 43.72	
Fruit/Root vegetables	0.2 ± 4.8	0.02 ± 0.39	
Legume vegetables	0.0 ± 0.7	0.00 ± 0.23	
Others	0.0 ± 0.5	0.0 ± 0.0	
Total	45.8 ± 56.2	37.29 ± 43.73	
Adult (19-55 years old)			
Leaf vegetables	64.2 ± 72.3	67.46 ± 94.13	
Fruit/Root vegetables	0.3 ± 4.5	0.04 ± 0.84	
Legume vegetables	0.0 ± 1.0	0.03 ± 0.95	
Others	0.0 ± 1.9	0.0 ± 0.0	
Total	64.5 ± 72.5	67.53 ± 94.21	

Notes: We only have data per age group from the source. There is no data differentiating men and women per age group for vegetable consumption. No data available for West Java.

Sources:

¹⁾ MOH 2014a

²⁾ MOH 2014b

Table 57 Fruit consumption (g/day) of adolescent and adult at national, DKI Jakarta and West Java

Target/Population	National ¹⁾	DKI Jakarta ²⁾	West Java
Adolescent (13-18 years old)			
Banana	10.6 ± 45.5	1.4 ± 7.7	
Orange	2.38 ± 18.0	6.6 ± 23.6	
Mango	3.3 ± 33.8	1.4 ± 23.1	
Papaya	1.6 ± 19.9	1.3 ± 11.7	
Watermelon	1.5 ± 18.0	0.7 ± 8.1	
Others	5.8 ± 32.2	11.8 ± 41.2	
Processed fruit	0.0 ± 0.9	0.0 ± 0.0	
Total	25.2 ± 75.1	23.1 ± 56.5	
Adult (19-55 years old)			
Banana	17.7 ± 56.4	19.7 ± 66.8	
Orange	3.43 ± 22.7	5.3 ± 30.6	
Mango	2.9 ± 27.0	5.1 ± 32.7	
Papaya	3.0 ± 23.6	7.0 ± 35.6	
Watermelon	2.7 ± 25.9	4.4 ± 40.1	
Others	7.1 ± 38.5	14.0 ± 44.2	
Processed fruit	0.0 ± 1.9	0.4 ± 6.3	
Total	36.8 ± 89.0	55.9 ± 113.4	

Notes: We only have data per age group from the source. There is no data differentiating men and women per age group for fruit consumption. No data available for West Java.

Sources:

¹⁾ MOH 2014a

²⁾ MOH 2014b

One of the messages in Balanced Nutrition Guidelines is to eat a lot of vegetables and adequate amount of fruits. World Health Organization (WHO) recommended

consuming vegetables and fruits at least 400 g per day, consisted of 250 g vegetables and 150 g fruits. For Indonesian people, it is recommended to consume vegetables and fruits of 400-600 g per day for adolescents and adults. About two-thirds of the recommended consumption should be from vegetables. The consumptions of vegetables and fruits of adolescents and adults at national and DKI Jakarta were far below the recommended guidelines. The adolescents only eat vegetables and fruits less than 20% of the recommended amount, while adults eat vegetables and fruits about 20-40% of the recommended amount.

1.3.5 Key foods in each nutrient intake

Table 58 Key foods which comprise 75% of energy and nutrient intake at national, DKI Jakarta and West Java

Nutrient	National	DKI Jakarta	West Java
Energy (kcal) Key foods (kcal; %)	2,037.40 <ul style="list-style-type: none"> Cereals (896.38; 44) Prepared food and beverages (399.03; 19.6) Oil and coconut (260.68; 12.8) 	1,982.28 <ul style="list-style-type: none"> Cereals (692.00; 34.9) Prepared food and beverages (514.98; 26) Oil and coconut (246.75; 12.4) Eggs and milk (113.30; 5.7) 	2,126.43 <ul style="list-style-type: none"> Cereals (897.26; 42.2) Prepared food and beverages (502.04; 23.6) Oil and coconut (246.53; 11.6)
Protein (g) Key foods (g; %)	56.67 <ul style="list-style-type: none"> Cereals (21.09; 37.2) Prepared food and beverages (11.25; 19.9) Fish/shrimp/common squid/shells (7.17; 12.7) Legumes (4.97; 8.8) 	60.30 <ul style="list-style-type: none"> Prepared food and beverages (17.17; 28.5) Cereals (16.28; 27) Fish/shrimp/common squid/shells (6.17; 10.2) Eggs and milk (5.89; 9.8) 	60.43 <ul style="list-style-type: none"> Cereals (21.10; 34.9) Prepared food and beverages (14.86; 24.6) Fish/shrimp/common squid/shells (5.96; 9.9) Legumes (5.24; 8.7)

Notes: Examples of prepared food and beverages were bread, cookies, fritter, complete meal dish (fried food, vegetable salad with peanut sauce, etc.), mineral water, soft drink, and alcoholic beverages.

Source: Statistics Indonesia 2016

Key foods which comprise 75% of energy intake were similar at national, DKI Jakarta and West Java, namely cereals, prepared food and beverages, oil and coconut. Similarly, 75% of protein intake was also come from cereals, prepared food and beverages, with addition of from fish/shrimp/common squid/shells and legumes.

1.3.6 Food intakes per existing food groups

Table 59 Food intakes per existing food groups (g/day) of adolescent and adult at national, DKI Jakarta and West Java

Target/Population	National ¹⁾	DKI Jakarta ²⁾	West Java
Adolescent (13-18 years old)			NA
Rice and Cereals	273.7 ± 140.2	438.1 ± 160.2	
Tubers	27.4 ± 112.8	35.9 ± 60.0	

Target/Population	National ¹⁾	DKI Jakarta ²⁾	West Java
Beans	50.3 ± 80.6	50.3 ± 66.7	
Vegetables	45.8 ± 56.2	37.29 ± 43.73	
Fruits	25.2 ± 75.1	23.1 ± 56.5	
Poultry and Meat	46.2 ± 91.3	77.9 ± 96.0	
Innards	1.8 ± 16.2	5.7 ± 20.5	
Fish and Seafood	69.0 ± 120.9	44.4 ± 84.9	
Eggs	21.9 ± 36.0	39.5 ± 47.6	
Milk (powder)	3.7 ± 15.9	5.4 ± 29.4	
Milk (liquid), ml/day	3.6 ± 30.1	13.2 ± 51.1	
Oil and fats	33.6 ± 44.1	61.8 ± 71.3	
Sugar and confectionaries	11.6 ± 24.0	21.3 ± 43.4	
Seasoning	18.6 ± 20.0	28.2 ± 29.2	
Beverages (powder)	6.0 ± 22.4	5.4 ± 15.4	
Beverages (liquid), ml/day	46 ± 119	80.0 ± 172.0	
Composite food	0.7 ± 10.3	5.4 ± 28.1	
Water, ml/day	1,174 ± 609	2,064.1 ± 965.2	
Supplement	0.4 ± 11.2	3.1 ± 37.1	
Herbs	0.1 ± 5.3	0.4 ± 6.8	
Adult (19-55 years old)			NA
Rice and Cereals	272.6 ± 132.7	402.4 ± 130.3	
Tubers	28.8 ± 117.8	33.2 ± 61.5	
Beans	60.8 ± 92.6	76.8 ± 83.8	
Vegetables	64.5 ± 72.5	67.53 ± 94.21	
Fruits	36.8 ± 89.0	55.9 ± 113.4	
Poultry and Meat	44.4 ± 93.1	83.6 ± 103.4	
Innards	2.4 ± 16.8	8.6 ± 28.5	
Fish and Seafood	85.1 ± 136.4	59.4 ± 104.9	
Eggs	19.7 ± 35.2	35.8 ± 44.0	
Milk (powder)	2.4 ± 11.9	1.1 ± 7.0	
Milk (liquid), ml/day	1.8 ± 22.8	8.5 ± 52.5	
Oil and fats	40.1 ± 49.2	66.7 ± 68.9	
Sugar and confectionaries	16.4 ± 22.6	18.3 ± 30.2	
Seasoning	21.9 ± 22.2	28.1 ± 25.1	
Beverages (powder)	10.1 ± 21.3	14.6 ± 27.2	
Beverages (liquid), ml/day	20 ± 96	59.9 ± 175.9	
Composite foods	0.6 ± 10.1	1.1 ± 12.6	
Water, ml/day	1,439 ± 816	2,440.6 ± 1,073.0	
Supplement	0.4 ± 15.8	1.9 ± 29.6	
Herbs	0.5 ± 9.5	2.3 ± 20.4	

Notes: Only data per age group were available from the source. There is no data seggregating men and women per age group for consumption per food groups. Composite foods were standard fried chicken, pizza, burger, and French fries. No data available for West Java.

Sources:

¹⁾ MOH 2014a

²⁾ MOH 2014b

1.4 Physical activity levels

Definition

Data on physical activity was obtained from RISKESDAS 2013, assessment of physical activity conducted on population age ≥ 10 years via interview about their activity in the past week. The interview performed using Global Physical Activity Questionnaire (GPAQ) 2012 formulated by WHO (WHO 2012). Table 58 shows the definition of the physical activity category.

Table 60 Definition of physical activity

Category	Definition	New Category
Heavy physical activity	Vigorous-intensity activity that causes large increases in breathing or heart rate like drawing water from well, mountain climbing, sprint run, cutting down trees, ploughing, carrying or lifting heavy loads, digging or construction work for at least 10 minutes continuously for minimum 3 days in a week with total activity time of 75 minutes in a week.	Active
Moderate physical activity	Moderate-intensity activity, that causes small increases in breathing or heart rate such as brooming, mopping floor, brisk walking or carrying light loads for at least 10 minutes continuously for minimum 5 days with total activity time of 150 minutes in a week.	
Light physical activity	Other than heavy and moderate physical activities.	Less active

Results

For the physical activity level, RISKESDAS2013 defines 'active physical activity' as activity causing small increases in breathing or heart rate lasting at least 10 minutes per day for minimum 5 days with total activity time of 150 minutes in a week. According to this definition, 73.9% of Indonesian people were considered as physically active. The proportion was relatively similar in West Java. However, compared to national and West Java data, DKI Jakarta population was less active, shown by proportion of population with active physical activity of only 55.8%.

Table 61 Distribution of physical activity among population age ≥ 10 years at national level (%)

Population	Active	Less active
Population age ≥ 10 years	73.9	26.1
Women ≥ 10 years	74.2	25.8

Table 62 Distribution of physical activity among population age ≥ 10 years in DKI Jakarta (%)

Population	Active	Less active
Age ≥ 10 years	55.8	44.2

Table 63 Distribution of physical activity among population age ≥ 10 years in West Java (%)

Population	Active	Less active
Age ≥ 10 years	74.6	25.4

Proportion of active population increased as the age increased until 44 years old and slightly decreased afterward. Active people was more in rural than urban area. As wealth increased, there was tendency that the propotion of active people declined.

Table 64 Distribution of physical activity among population age ≥ 10 years by characteristics at national level (%)

Characteristics	Active	Less active
Age group (year)		
15-19	64.6	35.4
20-24	73.9	26.1
25-29	80.2	19.8
30-34	83.1	16.9
35-39	84.3	15.7
40-44	84.4	15.6
45-49	83.5	16.5
Occupation		
Unemployed	64.1	35.9
Government/private employee	76.7	23.3
Entrepreneur	81.7	18.3
Farmer/fisherman/labor	86.6	13.4
Others	80.9	19.1
Region		
Urban	71.8	28.2
Rural	76.1	23.9
Wealth Index		
1	76.2	23.8
2	76.4	23.6
3	75.8	24.2
4	73.0	27.0
5	69.2	30.8

2. Existing policy, programs and initiatives for women at workplace

2.1 Nutrients and dietary recommendations/guidelines

1. Minister of Health of the Republic of Indonesia. 2014. Minister of Health of the Republic of Indonesia Regulation Number 41 Year 2014 on Balanced Nutrition Guidelines.
 - o Balanced nutrition has 10 general messages:
 - 1) Be grateful and enjoy variety of food
 - 2) Eat a lot of vegetables and adequate amount of fruits
World Health Organization recommends consuming vegetables and fruits 400 g per day, consist of 250 g vegetables and 150 g fruits. For Indonesian people, it is recommended to consume 300-400 g per day of vegetables and fruits for under-fives and school children and 400-600 g per day for adolescents and adults. About two-thirds of the recommended consumption should be from vegetables.
 - 3) Make it a habit to consume high protein side dish
The animal source food requirement is 2-4 portions, equal to 70-140 g of meat, 80-160 g of chicken, or 80-160 g of fish in a day. Plant source food requirement is 2-4 portions in a day, equal to 100-200 g of tempeh or 200-400 g of tofu.
 - 4) Make it a habit to consume variety of staple food
 - 5) Limit the consumption of sweet, salty and fatty food
Ministry of Health Regulation no 30/2013 about Inclusion of the Information on Sugar, Salt and Fat content and Health Messages for Processed Food and Ready to Eat Food stated that; sugar consumption more than 50 g (4 tablespoons), sodium more than 2000 mg (1 teaspoon or 5 g of salt) and fat/oil more than 67 g (5 tablespoons) per day will increase the risk of hypertension, stroke, diabetes and cardiac attack.
 - 6) Make it a habit to eat breakfast
Breakfast is eating and drinking activities done between getting up in the morning an 9 am to fulfil some daily nutrients requirements (15-30% nutrient requirements) to achieve healthy, active and productive life.
 - 7) Make it a habit to drink adequate and safe plain water
 - 8) Make it a habit to read the label on the food packaging
 - 9) Wash hands with soap and running water
 - 10) Do adequate physical activity and maintain normal body weight
 - o Special messages
 - Balance nutrition messages for pregnant women:
 - 1) Make it a habit to increase the variety of food consumed
 - 2) Limit consumption of food containing high salt
 - 3) Drink more of plain water
 - 4) Limit drinking of coffee
 - Balance nutrition messages for lactating women:
 - 1) Make it a habit to increase the variety of food consumed

- 2) Drink more of plain water
 - 3) Limit drinking of coffee
- Balance nutrition messages for adolescents (10-19 years old):
 - 1) Make it a habit to eat 3 times a day (breakfast, lunch and dinner) with family
 - 2) Make it a habit to consume fish and other protein food source
 - 3) Eat more vegetables and adequate amount of fruits
 - 4) Make it a habit to bring packed meal and plain water from home
 - 5) Limit consumption of sweet, salty and fatty fast food, street food and snacks
 - 6) Make it a habit to brush the teeth minimal 2 times a day, after breakfast and before sleep
 - 7) Avoid smoking
- Additional messages for adolescent girls:
- 1) Make it a habit to consume variety of food
 - 2) Eat a lot of green vegetables and colorful fruits



Figure 1. Indonesia Dietary Pyramid

- 2) Minister of Health of the Republic of Indonesia. 2013. Minister of Health of the Republic of Indonesia Regulation Number 75 Year 2013 on Recommended Dietary Allowance for Indonesian People (Appendix 1, 2, and 3).

2.2 Policy and regulations related to workplace meal provisions

Workplace meal provisions

1. Minister of Manpower and Transmigration of the Republic of Indonesia. 2004. Minister of Manpower and Transmigration of the Republic of Indonesia Decree Number 102 Year 2004 on Overtime Work Hour and Wages.
 - Company employs worker/labor on overtime is obligated to:
 - 1) Give overtime wages
 - 2) Give adequate break time
 - 3) Provide food and beverage at least contain 1,400 kcal, if overtime work is more than 3 hours.
 - Provision of food and beverage should not be replaced with money.
2. Minister of Manpower and Transmigration of the Republic of Indonesia. 2003. Minister of Manpower and Transmigration of the Republic of Indonesia Decree Number 224 Year 2003 on Obligation of Employers who Employs Female Worker between 11 pm and 7 am.
 - Employers who employs female worker between 11 pm and 7 am has an obligation to provide nutritious food and beverage at least contain 1,400 kcal. The meal should be given during break time and should not be replaced with money.
 - Provision of food and beverage, tools and dining room should be acceptable and fulfill the hygiene and sanitation requirement.
 - Food and beverage given to worker should be varied.
3. Ministry of Health of the Republic of Indonesia. 2012. Guidelines on Healthy and Productive Female Worker Movement.

Healthy and Productive Female Worker Movement, consists of the following activities:

 - Fulfillment of nutrition adequacy of female workers, suggesting them to assess their weight routinely, once a month
 - Health Check for Female Workers is suggested to be conducted in the beginning, during, and after working
 - Reproductive health services before pregnancy, during pregnancy, during labor, and after labor
 - Support breastfeeding during working hours in the work place
4. Republic of Indonesia. Law Number 13 Year 2003 on manpower.
 - Female workers / labor under the age of 18 (eighteen) years is prohibited to be employed between 23.00 to 07.00.
 - Employers are prohibited from employing workers / labor of pregnant women if based on doctors suggestion that it is harmful to the health and

safety of its contents as well as to herself when working between 23.00 to 07.00.

- Employers who employ female workers / labor between 23.00 to 07.00 shall:
 - a. provide nutritious foods and beverages; and b. maintain decency and safety while at work.
- Employers provide shuttle transportation for female workers / labor who go to and from work between 23:00 until 05:00.

Social Security System

Law Number 40 of 2004 about National Social Security System

- Social security program is mandatory for all Indonesian citizens, regardless of their employment; formal workers, informal sector, or self-employed.

Health Examination of Worker

Minister of Manpower and Transmigration of the Republic of Indonesia. 1980. Minister of Manpower and Transmigration Regulation Number 02 Year 1980 on Health Examination of Worker in Providing Work Safety.

- All company as stated in chapter 2 article 2 Constitution No. 1 Year 1970 must conducted Health Examination before working and Yearly Health Examination.
- The health examination includes complete physical examination, physical fitness, pulmonary x-ray (if possible) and routine laboratory, also other examination if needed.
- Special health examination also conducted to:
 - 1) Worker who has accident or disease needing care for more than two weeks
 - 2) Worker age over 40 years or female worker and disabled worker, also young worker doing certain jobs.
 - 3) Worker who is suspected to have health disorder that need special examination as required.
- Company is responsible for budget needed for periodic and special health examination.

Female Worker

Minister of Women Empowerment and Children Protection of the Republic of Indonesia. 2015a. Minister of Women Empowerment and Children Protection of the Republic of Indonesia Regulation Number 1 Year 2015 on Strategic Plan of Ministry of Women Empowerment and Children Protection Year 2015 – 2019.

- Problems that haven't been attended optimally to support gender equality and women empowerment, also fulfillment of children rights and protection is namely female workers especially in informal sectors which has broad type and dynamic condition. They haven't receive serious attention, namely in capitalization, technology, education and training, low wages, no overtime

pay, no work promotion, not organized, and occupational health insurance is covered by the female worker.

Gender Responsive and Child Friendly Work Facility

Minister of Women Empowerment and Children Protection of the Republic of Indonesia. 2015. Ministry of Women Empowerment and Children Protection of the Republic of Indonesia Regulation Number 5 Year 2015 on Provision of Gender Responsive and Child Friendly Work Facility in the Workplace.

- Increase on work productivity is done through provision of gender responsive and child friendly work facility, namely lactation room, day care center, health care facility and other supporting facility.
- Same opportunity for every women and men to conduct task, function, rights and responsibility at work. This same opportunity is also given to married women who are still in reproductive age, women in lactation period, women with under five years children. This same opportunity includes providing time to express breastmilk and or exclusive breastfeeding to infant during working hour.

Nutritional Improvement and Health of Worker

Republic of Indonesia. Law Number 36 Year 2009 on health.

- Community Nutritional improvement effort is aimed to improve individual and community nutrition and is conducted through
 - Improvement on consumption pattern of food based on balanced diet
 - Improvement of nutrition aware practice, physical activity, and health
 - Improvement of access and quality of nutrition service in line with science and technology development
 - Improvement of food and nutrition surveillance system
- Nutritional improvement effort is done in all stages of the life cycle from pregnancy to elderly with priority among vulnerable groups: infants and children underfive, adolescent girls, pregnant and lactating women.
- Occupational health effort is aimed to protect worker to live healthy and free from health problem and negative effect of the work.
- Work manager must conduct health effort in terms of preventive, promotive, curative and rehabilitative for the worker
- Work manager, supported by government, must assure health of the worker by conducting preventive, promotive, curative and rehabilitative health effort and pay all cost on occupation health.

Nutritional improvement

1. Minister of Health of the Republic of Indonesia. 2014. Ministry of Health of the Republic of Indonesia Regulation Number 23 Year 2014 on Nutritional Improvement Effort.
 - Nutritional service for nutritional improvement, prioritize on nutrition vulnerable groups which include 1) infant and under five children, 2) school children and

- adolescent girls, 3) pregnant, post-partum and lactating women, 4) women workers, and 5) elderly.
- Nutritional services are delivered through nutrition education, supplementation, treatment and surveillance.
 - Supplementation is aimed to fulfill nutrition adequacy and is given to children 0-59 months, school children, pregnant women, post-partum women, adolescent girls and women workers.
 - Nutritional service outside health care facility includes nutrition service in the work place.
 - Nutritional assessment is prioritized to under five children, school children and female workers. The assessment is determined by anthropometry, biochemical, clinical, and food consumption.
2. Minister of Health of the Republic of Indonesia. 2015. Minister of Health Regulation Number 21 Year 2015 on standard of vitamin A capsule for baby, children underfive, and post-partum women
- To reduce risk of morbidity and mortality among underfive children with vitamin A deficiency, the government provides vitamin A in form of capsule with 100,000 IU for 6-11 mo (blue) and 200,000 IU for 12-59 mo and postpartum women (red)
3. Minister of Health of the Republic of Indonesia. 2013. Ministry of Health of Republic of Indonesia Regulation Number 42 Year 2013 about immunization
- WRA and pregnant women is one of the targets for catch-up immunization (booster). Tetanus toxoid for WRA and pregnant women must be given for 5 doses with specific interval started before or during pregnancy

Breastfeeding

1. Government Regulation Number 33 Year 2012 on exclusive breastfeeding
Exclusive breastfeeding is feeding breastmilk without adding and/or substituting with any other food or beverages, except for medicine, vitamin, and mineral.
2. Minister of Health of the Republic of Indonesia. 2013. Ministry of Health of the Republic of Indonesia Regulation Number 15 Year 2013 on Procedures for the Provision of Breastfeeding Facility.
- Workplaces and Public Facilities must support exclusive breastfeeding by:
 - 1) Providing specific facility for breastfeeding and expressing breast milk
 - 2) Providing the opportunity for all working mothers to exclusively breastfeed their baby
 - 3) Develop internal regulations to ensure the success of exclusive breastfeeding
 - 4) Providing trained professionals in breastfeeding
 - The health requirements for the breastfeeding room must include at least:

- 1) Special room with minimum size 3x4 m² and/or adjusted to the number of women currently breastfeeding
 - 2) The room must have a door that can be locked and easily opened/closed
 - 3) Floor is made out of ceramic/cement/carpet
 - 4) Has sufficient ventilation and air circulation
 - 5) Free from pollution and work hazards
 - 6) Environment is relatively calm and far from disturbances
 - 7) Adequate lighting
 - 8) Humidity around 30-50%, maximum 60%
 - 9) Includes a sink with running water and soap to wash hands and pumping tools
- Every Breastfeeding room must have a person in charge that can also be a trained breastfeeding counselor which is appointed by the company/ public facility
 - The work place provides the budget needed to support exclusive breastfeeding. The budget should not be obtained from producers or distributors of infant milk formula and/or other infant products.
3. Directorate of Occupational Health and Physical Exercise, Ministry of Health Republic of Indonesia. 2011. Guidelines on Management of Breastfeeding in the Workplace.
- The company must have written regulation supporting breastfeeding in the work place
 - Provide the opportunity for lactating workers to breastfeed their children, if possible to go home and breastfeed or provide a day care in the work place. If not possible provide space to pump breastmilk
 - Provide room, tools and budget needed to support breastfeeding
 - Provide support for breastmilk pumping at least 20-30 minutes per session and 3-4 sessions per 8 hours of work
 - Provide important information on breastfeeding management in the work place which includes:
 - 1) advantages of breastmilk
 - 2) risks of giving formula milk
 - 3) suggestions on how to breastfeed effectively
 - 4) what to prepare in order to succeed in breastfeeding
 - 5) when is the right time to pump breastmilk in the work place
 - 6) steps on how to pump breastmilk
 - 7) advantages of expressing breastmilk with hands
 - 8) how to choose a good breast pump
 - 9) how to store breast milk in the work place
 - 10) durability of breast milk that has been pumped
 - 11) storing breastmilk at home and how to give pumped breast milk to infant

Chronic Diseases

1. Ministry of Health of Republic of Indonesia. 2011. National strategy on implementing food consumption pattern and physical activity to prevent noncommunicable diseases.
 - There are six national strategies in implementing food consumption pattern and physical activity to prevent noncommunicable diseases:
 - 1) Provide legal aspects to support implementation of diverse, nutritious, balanced and safe food consumption, as well as adequate and regular physical activity
 - 2) Conduct partnership and multisector approach including strengthening mechanism of National Network on Noncommunicable Diseases Control
 - 3) Improve and develop capacity to implement the activity/action
 - 4) Focus on equal right and eliminating disparities between community groups
 - 5) Increase effective evidence based intervention in all levels (household, school, public place, workplace and health service facility)
 - 6) Conduct operational researches and policy development, and long term strategies to sustain community based noncommunicable diseases prevention

- 2) Minister of Health of the Republic of Indonesia Decree Number 854 Year 2009 on guidelines to control cardiovascular diseases.
 - National priorities for cardiovascular diseases control are hypertension, CHD, and stroke
 - Cardiovascular diseases control should be conducted by government, civil society organization, and community.
 - There are 9 main activities:
 1. Conduct review and strengthening of legal aspect on cardiovascular disease control in Technical Implementation Unit, Provincial Health Office, District Health Office and Community Health Center
 2. Conduct advocacy and dissemination
 3. Conduct intensification, acceleration, extensification and innovation regarding program/activity on cardiovascular diseases control, based on technology advancement and local area specific through integrated planning and coordinated activities
 4. Human resources development
 5. Facilitation for the formation and improve role of regulator network on noncommunicable diseases, including cardiovascular diseases, Working Group, and existing network in each area
 6. Support logistic of mass screening detection for risk factors of cardiovascular disease in community and health service facilities, both in terms of availability and management

7. Conduct screening, epidemiological surveillance and information system development
8. Conduct monitoring and evaluation
9. Develop budgeting system for risk factors of cardiovascular diseases control

FGD Guidelines Nutrition Problems and Potential Interventions of Women in the Work Place

1. Current Nutritional Problems of Women in the Work Place
 - What are the various nutritional problems that occur among women in the work place?
 - What causes the variability?
 - Type of industry? Explore what type of industry tend to cause what type of nutrition problems?
 - Work load? Explore what type of work load causes certain types of nutrition problems?
 - Location? Explore
 - Scale/ size of the industry? Explore
 - Others? Mention, if any
 - What is perceived as the major nutrition problems among women in the work place? Why?

2. Existing Regulations to Address Nutritional Problems of Women in the Work Place
 - What are the existing regulations which address the aforementioned problems?
 - Who (stakeholders) which are responsible of addressing these problems?
 - Are there any other stakeholders who should take part?
 - Are the regulations any effective? If yes/no, what is the indicator? Why?
 - What will help and support the regulations to be effective?

3. Potential Nutrition and Health Interventions for Women in the Work Place
 - What are the possible nutrition and health interventions for women in the work place?
 - What are the strengths and weaknesses of the type of interventions below? In terms of feasibility and sustainability:
 - Food-based interventions?
 - Supplementations?
 - Nutrition Education?
 - Institutional advocacy?
 - Which intervention is most effective (can be a combination of more than one)?
 - What are the resources/ supporting factors that need to be in place for the intervention to be successful?
 - What are the possible challenges in implementing the intervention?

2.3 Partnership (including public-private partnerships), national/regional programs and initiatives related to workplace meal provision

A. Workplace meal in PT. Yakult Indonesia Persada (interview with Mrs. Ira as Human Resource Development PT. Yakult Indonesia Persada)

Basic information and characteristics of workers

Company name	PT YAKULT INDONESIA PERSADA
Address	Kawasan Industri Indolakto Desa Pasawahan, Cicurug Sukabumi, Jawa Barat
Business type	Food and Beverages
Total worker	388
Total women worker	65
Product	Fermented milk
Mean age of worker	35 years
Education level of worker	Senior High School 75%
Working hour	8
Number of shift	2
Five most frequent diseases	Dental calculus Prehypertension Overweight Prediabetes Eye disease

Health services and programs for workers

Regular health examination for the workers was conducted annually with full medical check up covering anamnesis and physical examination by medical doctor and special physical examination (nervous disorder, low back pain, eye bacterial infection, skin irritation, eye irritation, frostbite), eye examination for driver, chest x-ray, audiometry, spirometry, electrocardiogram (ECG), blood profile, liver function, lipid profile, urinalysis, and fecal analysis. Worker suffered from disease found by the company clinic was referred to Medicare Clinic, a private clinic which has an agreement with the company.

The company mentioned that there was no nutrition problem like anemia or vitamin D deficiency. However, according to them, the problem of overweight had some impact on prehypertension and prediabetes since it was caused by old age and less exercise.

Compensation and Benefit Division of Human Resource Development (HRD) of the company, coordinate and conduct regular education on work health and safety for the workers. Every week, the participants were switched between production and non production workers, covering different topic. The company also has nutrition education program for the cafeteria management as the meal provider coming from private catering. The company also monitored the menu in every menu cycle.

The company provide meals in the cafeteria in collaboration with private catering service. The menu includes source of carbohydrate, animal and plant protein, mineral, vitamin, and water. There was no detail in nutrient content in every meal

but the caterer mentioned that it provides 2500 kcal for every worker. As an example, one of the menu was rice, beef rendang, Padang roast chicken, fish with chili sauce, Javanese battered tempeh, roast potatoes in spicy chili sauce, chili, chips, fruit with extra of eggs with chili sauce. There was additional food for overtime worker consisted of fruit, snack, egg and yakult. There was no additional food for pregnant and lactating women. The workers were not given any supplement because the company already provide health incentive and enroled all workers in national health insurance (BPJS).

There were sufficient toilets, separated for male and female with standard facility which met the ratio of the workers. Mothers room which is equipped with a curtained bed is attached to the company clinic and able to be used by the workers. The workers were allowed to use the room in any time and frequency. After collection the breastmilk can be stored in refrigerator in the QC room. The company policies supported the program of exclusive breastfeeding.

B. Scaling-Up Nutrition (SUN) Business Network (SBN) (interview with Mr. Stefanus Indrayana as GM Corporate Communications Indofood and SBN Indonesia)

SBN is an initiative from private companies which is called partners of National Development Planning Board (Bappenas) and MOH. Companies inside the network pledge a commitment to help government in tackling malnutrition trough sensitive and specific strategies stated in National Nutrition Strategy. Currently, 31 companies are joining the network. The companies are coming from various backgrounds, namely food, medicine, baby product, motor vehicle, and bank.

The priorities for private sectors are: 1) 1000 first days of life, for mothers and children and support for parents on appropriate child feeding practices; 2) balanced nutrition foods and adolescence, developing consumer behavior change; campaign for a 'balanced diet' focusing on adolescent girls; and 3) inadequate access to health and sanitation, sanitation and clean water services. The form of intervention depend on the concern and strategy of each company by adapting the Strategic Framework of SBN (Figure 1) By pointing 1000 days of life, SBN has hoped that the problem on noncommunicable disease (NCD) would reduce in the future. Moreover, SBN expected that government regulation on NCD is translated into technical guidance with common language easily understood by the public.

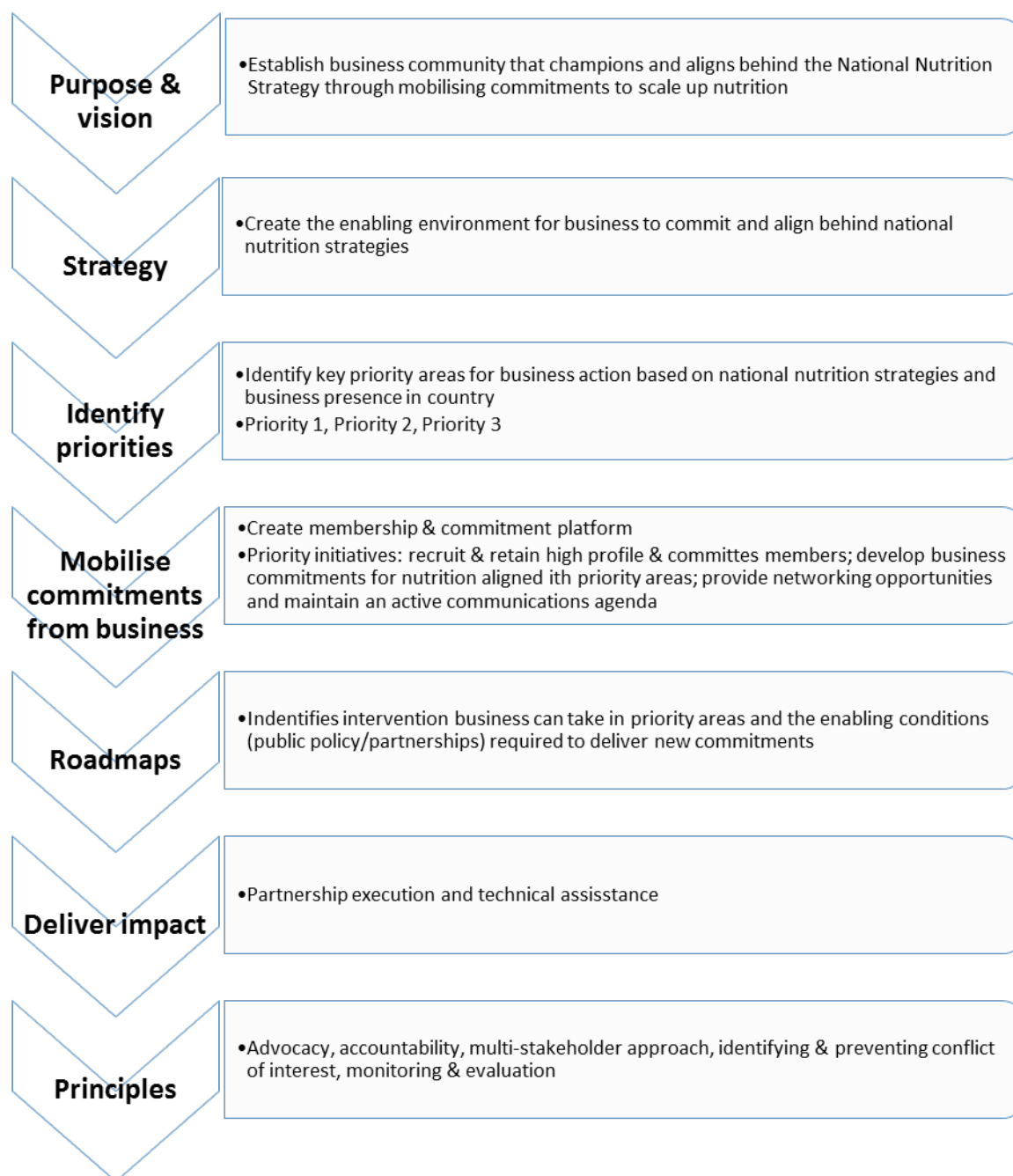


Figure 1. Strategic Framework of SBN

In order to answer the nutrition problem, one of the members of SBN, Indofood, is currently implementing Nutrition Workforce for Employee, breastfeeding support, campaign to educate mother and pregnant women about the importance of 1000 first days of life, and Integrated Health Post (Posyandu) revitalization. Posyandu is community based health effort aimed to provide basic health services to accelerate the reduction of maternal and infant mortality rate. Posyandu is commonly formed in subvillage level, initiated, run and managed by volunteers with supervision from the local community health centre. The main targets of Posyandu are children under five years old and their parents, pregnant women, lactating women and their babies, and women of reproductive age. Posyandu services consist of five basic activities known as '5 tables'. Table 1 to 4 services are provided by volunteers often called Posyandu cadres; 1) registration, 2) body weight

measurement and monitoring, 3) growth control card or book filling, 4) health education including explanation regarding children growth based on the result in the monitoring card and the last table or the 5th is provided by health personnel, this is the table where immunization, family planning, iron supplementation, vitamin A supplementation, and any other mild medical treatment.

Based on several specific criterias, Posyandu is then categorized into 4 levels with level 4 as hold best performance. Posyandu is categorized as level 1 when the activity is not regularly conducted every month or the number of cadre do not reach 5 persons, while Posyandu level 2 fulfills the criteria in level 1 but the proportion of target attending Posyandu as well as the coverage of the main activities (maternal and child health, nutrition, family planning, immunization, and diarrhea treatment) are still below 50%. In addition the Posyandu usually do not have integrated basic social service. Posyandu in level 1 and 2 are the targets of Posyandu revitalization. Revitalization is conducted by providing scales, monitoring cards or books, t-shirts for cadres, and complementary food as well as training and consultation for the cadre and free of charge health and nutrition consultation and education for the targets.

C. Government Efforts to Control Non Communicable Diseases

Directorate of Non Communicable Diseases Control

The Directorate of Non Communicable Diseases Control under the Ministry of Health, RI has been established since 2005. Its main tasks are to formulate and implement policies, and also develop norms, standards, procedures and criteria as well as providing technical guidance and evaluation in the field of non-communicable diseases (NCD) control. The tasks and function of the Directorate of NCD Control is reinforced and renewed through the **Presidential Decree No. 35 year 2015 on the** Ministry of Health.

In implementing its tasks, the Directorate is equipped with several sub directorates, namely:

- Subdirectorate of cardiovascular diseases control
- Subdirectorate of diabetes mellitus and metabolic syndrome control
- Subdirectorate of cancer control
- Subdirectorate of chronic and degenerative diseases control
- Subdirectorate of disorders due to accidents and violence control
- Subdivision of administration

It's strategies includes strengthening legal aspects of prevention and treatment of NCD's, increase epidemiological surveillance of NCDs, increase early detection (screening) of risks factors of NCDs, increase communication, information and education on the prevention of NCDs, improve the quality of disease management of NCDs, increase partnership and active roles of the community in preventing NCDs and increase replication of prevention and treatment programs of NCDs

NCD Control Programs

Cigarette Consumption Control

The prevalence of cigarette consumption in Indonesia is strikingly high, which is 36,3% in 2013 and continues to show rapid increase throughout the years. Whereas

it is one of the main risks factors of hypertension, 31.7% and it may lead to other NCD complications.

Activities of this program includes 1) a comprehensive tobacco control activity which ensures its sustainability and integration within public policies, 2) reinforcement of the government to implement tobacco control policy through national, local and other funding sources, 3) increase capacity of resources and institutions in tobacco control, 4) monitoring the prevalence of tobacco use and preventive policies, 5) protection of the community from tobacco smoke, 6) optimization of anti smoking support through the provision of its services in the primary health services, 7) increase awareness of the community on the danger of tobacco smoke, 8) elimination of smoking advertisement, promotion and sponsorship, and 9) increase taxes for tobacco and cigarette. This program is aimed to reduce the prevalence of smoking by 5% and for 50% of the primary health services to have provided smoking cessation services which is integrated within the disease control program by the end of 2019.

Anti Smoking Areas (ASA) is one of the activities under this program which has been emerging in several public facilities. ASA is a space or area which has been secured from any smoking activity, including the production, selling, advertising and/or promoting of tobacco is banned. This is especially effective in closed buildings where it must be 100% smoking free. ASA has been reinforced due to the Presidential Decree number 109 year 2012 on Addictive Substances Containing Materials in the Form of Tobacco Products For Health.

Integrated Health Post for NCDs

The NCD Integrated Health Post is an active community participation in the early detection, monitoring, and follow up of NCD risks factors which is conducted independently and sustainable. It is under the supervision of the local Primary Health Facility. The main objective of this program is to control risk factors of NCDs which targeted healthy people, those at risk and people with NCDs starting from the age of 15 years and above.

Risk factors addressed in the integrated health post includes cigarette and alcohol consumption, low fruit and vegetable intake, domestic violence, physical activity, Body Mass Index (BMI), analyses of body fat and blood pressure. Routine monitoring activity consists of blood glucose and cholesterol level assessment, a simple lung function test, alcohol level from breath and urine amphetamine test. The follow up activity includes education on how to prevent and control risk factors of NCD's which is conducted through mass education/ interactive dialogue and/or counseling.

In the NCD Integrated Health Posts, people are educated with a jargon abbreviated in Bahasa Indonesia as CERDIK which means smart, it consists of 1) check your health condition periodically, 2) eliminate cigarette smoke, 3) regular exercise, 4) healthy diet with balanced calories, 5) adequate rest, and 6) control for stress.

In its implementation the NCD Integrated Health Post is integrated within the existing community based activity which may be at school, work place or, in the home environment. Currently there are 7.225 NCD Integrated Health Posts throughout Indonesia.

Stroke Control Program

This program consists of three main strategies which are health promotion, health services and surveillance. The health promotion strategy includes 1) reinforcement of regulations on ASA in all level of administrative government regions, 2) health education on healthy diet and balanced nutrition (reduce the consumption of sugar, salt, fat) to prevent risk factors of NCDs, 3) socialization of the Ministry of Health Decree No. 30 year 2013¹ on the strengthening of food labeling (obligation to include information on total sugar, sodium and fat) and health messages regarding the maximum limit/allowance of sugar, salt and fat consumption per person per day, 4) increase vegetables and fruit intake, 5) increase physical activity, 6) stress management, 7) national campaign on NCD exercises, and 8) networking on NCDs control.

The health services strategies includes increase early detection and follow up of risk factors of NCD through NCD Integrated Health Posts, and also improvement of disease management of the main risk factors in the primary health facility. While the surveillance strategy includes surveillance of NCD risk factors, routine national health surveys, NCD registries and cause of death registries.

¹ Ministry of Health Decree No. 30 year 2013 is on the Inclusion of Information of Total Sugar, Salt, and Fat Content and also Health Messages on Processed Food and Ready-to-Eat Foods. It is one of the efforts to protect and educate consumers on the risks of NCDs, especially hypertension, stroke, diabetes and heart attacks. The health messages implied in this regulation are "Consuming sugar more than 50 g, sodium more than 2000 mg, or total fat more than 67 g per person per day increases the risks of hypertension, stroke, diabetes, and heart attacks."

Self-Detection of Systemic Lupus Erithematosus

Early detection of systemic lupus erithematosus (SLE) is conducted in communities at risk of SLE, namely women of reproductive age, at the NCD Integrated Health Posts using Self Detection of Lupus (SDL/ in Bahasa Indonesia it is abbreviated as SALURI) questionnaire and at the Primary Health Facility or other health facility.

SALURI is one of the instruments developed by the Directorate of NCD Control for early detection of SLE which can be administered by lay people, especially women of reproductive age (15-45 years old). In the implementation of this program, the Directorate of NCD's main role is to socialize and advocate this program to the Provincial and Local Health Office, conduct early detection of SLE through screening, and conduct training for health workers.

Hypertension Control Program

The objective of this program is to conduct hypertension control efforts to reduce mortality, morbidity and disabilities caused by hypertension in Indonesia. The Directorate of NCD Control has formulated several regulations for the control of hypertension, such as developing and strengthening risk factors of hypertension through the NCD Integrated Health Posts, develop the CERDIK jargon, develop community-based rehabilitation programs and strengthen referral systems in hospitals, as well as monitoring of the disease through periodic epidemiological surveillances.

Activities included in the early detection of hypertension are blood pressure monitoring in NCD Integrated Health Posts and primary preventive measures. The

later includes 1) promotion and prevention through life style changes (reduction of weight, regular physical activity, reduce alcohol consumption, reduce salt consumption, smoking cessation (according to the Guidance of Healthy Life Style), 2) management of risk factors, and 3) nutrition education to increase awareness about hypertension through mass education and mass media.

D. Nutrition Improvement by Directorate of Community Nutrition MOH (interview with Mr. Doddy Iswardy as Director of Community Nutrition MOH)

President of Indonesia, Mr. Joko Widodo, presented 10 messages in the National Health Workshop 2015: 1) health is very fundamental; 2) improving nutrition is an investment; 3) infectious diseases must be eliminated; 4) prevention is better than cure; 5) healthy lifestyle should be implemented; 6) synergy among ministries/institutions is important; 7) budget management of central-local government should be improved; 8) smoking should be stopped; 9) health personnel should do proactive approach; and 10) reformation in bureaucracy is necessary. The strong messages then translated into implementation plan, this verbal political commitment from the President also was an important momentum for mainstreaming the already present Presidential Regulation Number 42 Year 2013 about National Movement of Nutrition Improvement Acceleration (*Gerakan Nasional Percepatan Perbaikan Gizi/Gernas*). This movement focus on the 1000 days of life and is an integrated joint effort of various stakeholders at local and national level. The regulation mentioned the role of various ministries and institutions in accelerating the nutrition improvement. With all the sectors involved was mentioned clearly namely: Coordinating Minister of Human Development and Culture, Ministry of Health, Ministry of Agriculture, Ministry of Maritime and Fisheries affair, Ministry of Education and Culture, Ministry of Industry, Ministry of Trade, Ministry of Social Service, Ministry of Religious Affair, Ministry of Communication and Informatics, Ministry of Women Impowerment and Child Protection, Ministry of Home Affair, Ministry of National Development Planning, and State Secretariat.

There were 4 agendas of Gernas: 1) advocacy, campaign, dissemination and communication-information-education on behavior change, specifically through advocating adoption of the Presidential Regulation 42/2013 to the ministries/institutions in central, provincial and district level and other stakeholders for obtaining sustainable support. This effort then accompanied by dissemination to community and campaign/communication-information education for target group; 2) strengthening horizontal and vertical multisector coordination through Gernas Secretariate, to develop synergy for specific and sensitive programs which currently are implemented and planned; 3) identification of cost-effective or potentially cost-effective program to eliminate double burden of malnutrition complete with cost calculation, monitoring and evaluation procedure as well as the potential for scaling-up; and 4) develop database for nutrition related data as well as specific and sensitive programs in Bappenas, which is essential for integration, monitoring and evaluation of program on nutrition improvement acceleration.

Minister of Health Regulation Number 30 Year 2013 about inclusion of information on sugar, salt, fat and health messages for processed and fast food mentioned; that all processed and fast food products which use sugar, salt and/or fat must include information on total sugar, total natrium and total fat in the label. This information on

sugar, salt and fat content should also be disseminated by the producent via information and promotion media. The products must also include health message read "Consumption of sugar more than 50 gram, natrium more than 2000 miligram, or fat more than 67 gram per person per day increase risk of hypertension, stroke, diabetes, and heart attack". Later, Minister of Health Regulation Number 63 Year 2015 provided the deadline for implementation of the previous Minister of Health Regulation Number 30 Year 2013 which mentioned that all processed and fast food products must implement the regulation maximum 4 years after the date of the regulation. With regard to legal aspect, MOH is also currently preparing regulation to substitute the 2009 standard of child anthropometry. The regulation will then disseminated to various institutions, including local government, universities and NGOs.

The strategic plan of MOH included various promotive and preventive programs to reduce maternal and infant mortality rate, stunting, infectious diseases and NCD (specifically by Directorate of Non Communicable Diseases Control). The focus was on 1000 days of life, since it contributed to 25% of NCD in the later life. Thus, MOH mainly addressed behavior change of the people. To initiate within their internal institution, MOH provides bazaar every month selling local food, fruits and vegetables to the MOH staffs. To obtain information on achievement of various programs, MOH conducted regular survey on nutritional assessment on various target groups, such as underfive children, pregnant women, post-partum women, and female adolescents.

E. Studies in the Workplace

The studies mostly were cross-sectional. There were only four intervention studies. The samples were female workers of reproductive age ranging from 15-55 years old. Variables included in the cross sectional studies were food consumption, nutrient intake, nutritional status, productivity, physical activity, fitness level, anemia status, and metabolic syndrome. The intervention studies used various supplementation to improve health and nutritional status of female workers, i.e. iron-folic acid vs multiple vitamin and mineral (MVM), iron-folic acid-vitamin B12, and vitamin D only vs vitamin D-calcium.

Underweight is not the main problem found, but it was not inexistence since there were few studies mentioning high prevalence of underweight. In the contrary, the main problems were overweight and obesity. Micronutrient deficiency such as vitamin D and iron deficiency anemia was also prevalent. Thus, indicating the present of triple burden of malnutrition.

Metabolic syndrome which also constitutes cardiovascular risk factors i.e. increase fasting blood glucose, central obesity, high blood pressure, hypertriglyceridemia and decrease of high density lipoprotein (HDL) is a rising health issue. One study found that the prevalence of metabolic syndrome is 18.6% among female workers age 25-49 years in garment factory in Bogor, West Java (Solechah et al 2014). All female worker with metabolic syndrome had central obesity, almost all (90.9%) had high blood pressure, more than half (54.5%) had high triglyceride, almost three quarter (72.7%) had low HDL, while only less than a fifth (18.2%) had high fasting

blood glucose.

In regards to food consumption and nutrient intakes, one study showed all the workers consume breakfast before they went to work, however the average energy consumed were less than 400 kcal (Sukati et al 1997). Furthermore, this study found that workers with adequate breakfast (>250 kcal) had better production outcome compared to workers with inadequate breakfast (<200 kcal). There was a positive relationship between energy consumption per day with the number of production per day. On the other hand, Rina et al (2010) found that there was no significant association between nutrient intake (energy, protein fat, carbohydrate, and iron) with work productivity.

The physical activity level of women worker is based on their place of work. One study in a garment factory showed that the physical activity of workers are light, which included sewing as their major activity (Soetrisno et al 1998). Conversely, a study on tea plantation female worker (Mahardikawati and Roosita 2008) found that more than half of the samples have active or moderate physical activity level (PAL). The physical activity level of samples during work day (average PAL=1.87) was higher than holiday (average PAL=1.69).

Some studies on physical fitness of female workers showed that those who work in garment factory had low physical fitness (Soetrisno et al 1998 and Utami 2014), while those who work at tea plantation had good to superior physical fitness (Indriani et al 2011). Utami (2014) found that there is an association between nutrition status and physical fitness with work productivity of female workers working at the spinning unit of a garment factory.

Prevalence of anemia among female workers ranged between 35% to 62.4% (Soetrisno et. al. 1998, Suyardi et. al. 2009, Aminah and Iriyanto 2008). The cause of anemia is not only nutritional deficiency, as Suyardi et al (2009) found that in 62.4% of the anemic female worker 44% was nutritional anemia and 18.4% was unidentified anemia. The nutritional anemia consists of 35.2% iron deficiency anemia, 1.6% B12 deficiency anemia, 3.2% Iron + vit. B12 deficiency anemia, 0.8% vit. B12 + folic acid deficiency, and 1.6% iron + vit. B12 + folic acid deficiency anemia.

Three intervention studies using supplementation for anemia showed improvement on the hemoglobin level of the subjects. Indriani et al (2013) found that levels of Hb, haematocrit (Hc) and serum ferritin increased in those who were given iron-folic acid supplementation, while these indicators declined in those who were given multiple vitamin mineral (MVM) supplementation. Muwakhidah et al (2010) also found there was a difference of Hb level before and after provision of Fe, folic acid and vit. B12 supplementation, however there were no differences between the groups. Furthermore, Indriani et al (2011) discovered that both iron folic acid and MVM supplementation were able to increase physical fitness of anemic workers. Iron folic acid supplements was better in improving iron status, while the MVM was better in improving the physical fitness of anemic workers.

Only one study investigated vitamin D deficiency among female workers and gave intervention in the form of supplementation (Yosephin et al 2015). This study compare the effect of vitamin D supplementation (VD) with vitamin D+calcium supplementation (VDC). The results showed that the increase of serum 25(OH)D in

VD group was almost two times higher than that of the VDC group, and the difference is significant different. The study concluded that Vitamin D supplementation with a dosage of 400 IU has proven to improve the vitamin D status of women of reproductive age working in a garment factory. However, the dosage needs to be increased, knowing that these group of subjects are rarely exposed to sun light as precursors of vitamin D. The details on the study was presented in separate document.

3. Recommendations for improvement of meal provision for women at workplace

3.1 Nutrition targets at workplace

This study identified several health and nutrition issues related to both undernutrition and overnutrition. This is clearly a double burden of malnutrition and is a growing public health challenge in Indonesia.

Our key finding related to primary nutritional challenges for women in the workplace was that there is a high prevalence of CED and inadequate food intake among adolescent girls and young adult women aged 15–19 years. They are a vulnerable group with respect to undernutrition. We also found a discrepancy related to their energy and protein intake compared with the RDAs. This issue should be addressed as a priority target for nutrition improvement in the workplace through the joint efforts of public and private concerns.

A second nutritional challenge is the prevalence of anemia, which we identified as a moderate public health significance in both adolescent girls and WRA; the highest prevalence was among pregnant women. The Indonesian government provides iron supplements to adolescent girls and WRA through the Community Nutrition Improvement Program; however, optimal iron supplement consumption among the population was insufficiently managed. We also observed insufficient iron consumption among WRA and pregnant women from their diets. Several initiatives addressing this challenge have been undertaken at the policy level as well as from the private sector. An example of the former is legislation regarding mandatory nutrient supplements in certain staples; an example of the latter is a pilot model developed to provide iron-fortified rice to adolescent girls. Hence, effective accountability frameworks targeting this challenge should be sought through public-private partnerships.

A third nutritional challenge is the rising prevalence of overweight and obesity as well as concurrent risks of chronic diseases, such as HBP and IGT. These challenges related to overnutrition are of increasing importance among WRA in Indonesia. This should therefore be recognized as a significant public health problem: more and more women will enter pregnancy with underlying chronic diseases and be more prone to high-risk pregnancy. Regarding dietary intake and physical activity, low intake of vegetables and fruits was an obvious issue, and we identified inactivity status among 30 to 50 percent of the population. Only a limited number of policy frameworks have addressed this growing challenge in Indonesia; however, increasing numbers of small-scale initiatives have been developed by both the public and private sectors.

3.2 Policy environment related to workplace nutrition

This desk review study found 18 regulations related to women worker covering nutrients and dietary recommendations/guidelines, regulations related to workplace meal provisions, nutritional improvement, breastfeeding and chronic diseases. The regulations mainly came from Ministry of Health (MoH), Ministry of Manpower and Transmigration (MoMT), and Ministry of Women Empowerment and Children Protection.

Though some relevant policies and regulations exist with respect to providing meals in the workplace, there are no comprehensive standards or clear guidelines for implementing nutritional services for working women. According to Ministry of Health Regulation Number 23 Year 2014, nutrition improvement efforts should be undertaken to provide comprehensive nutritional services. Those efforts should include nutrition education, supplementation, treatment and surveillance; the efforts should also be conducted in the workplace so as to provide nutrition services outside health-care facilities.

3.3 Recommended programs for provision of the nutritious meal provision

With regard to the above challenges, comprehensive nutrition services in the workplace could complement and synergistically assist to improve public nutrition services in Indonesia. Such services in the workplace can be addressed through public-private partnerships, particularly with respect to meal provision. Several policies for overtime workers (MoMT Decree No. KEP.102/MEN/VI/2004) and female workers engaged in late shifts (MoMT Decree No. KEP.224/MEN/2003) were issued a decade ago to address nutrition adequacy through meal provision. However, those policies provide no indication about nutritional quality, i.e., the proportion and quantity of each nutrient category. Therefore, policies for meal provision in the workplace to meet the requirements stated by the guidelines for balanced nutrition (MOH Decree 41/2004) and RDA 2013 (MOH Decree 75/2013) should be initiated and implemented.

Meal for women workers should meet the balanced nutrition with appropriate energy, nutrient, and vegetable intake to address problem of anemia. This study provides sample menu for a worker with morning shift, so that the meal is given as lunch (Appendix 4). The sample menu was formulated and calculated using Nutrisurvey software (Erhardt 2007) with .

3.4 Limitation of the current research and further research agenda

This study was a desk review based on the available literature regarding population data, nutritional and health status, nutrient intake, and physical activity among Indonesian women as well as policies and regulations related to workplace meal provision. There are some limitations on the data availability in RISKESDAS (2013) and TDS (2014): they did not present their data in the appropriate categories for our expected target population, i.e., adolescent girls, nonpregnant WRA, pregnant women, lactating women, and with respect to regions and wealth index. However, this study provides sufficient data and analysis on the current health and nutritional status of Indonesian women in the workplace and covers existing policies, programs, and initiatives for working women. Despite that, the situational analysis and policy analysis were insufficient to meet our third objective: formulating recommendations for improving meal provision for women in the workplace. That was because we mainly

relied on secondary data for our analysis. We included several interviews with relevant stakeholders; however, owing to time limitations, the number of stakeholders involved was limited. A future analysis should include more inputs from relevant stakeholders through Focus Group Discussions and/or stakeholder workshops.

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