INDEPENDENT EVALUATION OF MEASLES - RUBELLA (MR) IMMUNIZATION COVERAGE IN SIX PROVINCES AT JAVA ISLAND.

INDONESIA 2018

Final Report

Department of Epidemiology Faculty of Public Health, Universitas Indonesia

Table of Content

List of Table

List of Figure

Acronyms

BCC	Behaviour Change Communication
BCG	Bacillus of Calmette and Guerin
CES	Coverage Evaluation Survey
CI	Confidence Interval
DPT	Diphtheria, Pertussis and Tetanus
EPI	Expanded Programme on Immunization
FKM	Faculty of Public Health
HB	Hepatitis B
IPV	Injection Polio Vaccine
MR	Measles-Rubella
MoH	Ministry of Health
NGO	Non Governmental Organization
NID	National Immunization Day
OPV	Oral Polio Vaccine
RI	Republic of Indonesia
SIA	Supplementary Immunization Campaign
SE	Standard Error
UI	Universitas Indonesia
UNDIP	University of Diponegoro
UNAIR	University of Airlangga
UNICEF	United Nation for Children and Funds
WHO	World Health Organization

TERMINOLOGY

This provides the meaning of some of the more technical terms used in this report and a brief explanation of their use.

First Dose Measles: An immunization given to a infant is termed as the first dose of measles if the immunization given for the first dose of measles immunization that usually given when the children age 9-11 months.

Second Dose Measles: An immunization given to a infant is termed as the first dose of measles if the immunization given for the first dose of measles immunization that ussually given when the children age 18-24 months of age.

School Immunization is immunization given to basic school children is termed to all immunization schedule given during basic school (1st, 3rd and 5th grade).

Measles School Immunization is measles immunization given to basic school children is termed to all immunization schedule given during basic school (1st grade) given during the first semester of 1st grade of basic school.

MR Immunization Campaign 2017 is Measles and Rubella mass immunization campaign for 9 months – 15 years old that was carried out in August – October 2017 in 6 provinces in Java island

Crude coverage rate is calculated from the doses recorded by card and/or by history. It is not ascertained whether the doses were given at the correct age and/or following the correct interval (where applicable). Crude data however, helps us to understand how much additional coverage could be achieved if all vaccines were given at the optimum age for the child and following the optimum interval. It also provides useful information on access to the EPI program and on the operational aspects of the provision of health services.

Valid Coverage is calculated from the doses recorded by card and/or by history and verified by reporting and recording at health center.

Missed opportunity refers to a visit of a child to a vaccination centre for a dose that he received. However, at that time he was also eligible for another dose of antigen that he did not receive. If the missed dose was provided later, it is a *corrected missed opportunity*. If not, it is an *uncorrected missed opportunity.*

Executive Summary

Indonesia had committed and adopted the goal of measles elimination and rubella/CRS control in South East Asia Region by 2020. In order to achive measles elimination by the year 2020 some activities have been and will be done, which are:

a. Indonesia has national measles elimination and rublella/CRS control by 2020 by conducting some objectives,which are: i)first dose measles coverage at leas 95% natioanally and >90% nat subnational by 2018. ii) second dose vacinnation coveage at least 95% in 2018. iii) Measles campaign at high risk areas at the end of 2016 with target children 9-59 month National MR Campaign in 2018- 2019 with target 9 month – 15 years
b. Fully investigated all detected/reported measles outbreaks
c. Case based measles surveillance where 50% specimens tested by 2016   and 100% specimen tested by 2020
d. CRS Surveillance initiated at selected hospital in 10 provinces in 2015 and will be expanded to the remaining provinces in 2017 - 2019

MR campaign had been done in West Java on August and September 2017 with coverage was more than 95%. However, assessment of MR campaign in West Java province may be conducted in order to know the real MR immunization coverage in the population and the obstacles during MR campaign in the field in West Java Province. This assessment is required to give advantages to other MR campaign in other provinces in the future.

The primary objective of evaluation is to estimate the coverage with MR vaccine among children targeted in the 2017 MR SIA by age group and strata (urban and rural). This assessment used cross sectional study design combined between quantitative (province coverage survey) and qualitative approach (Rapid Assessment Procedure (RAP). The survey (coverage survey) using WHO followed WHO manual for Immunization Coverage Survey 2015 to describe immunization coverage in the study areas. The qualitative approach used methods: indepth interview, observation, and secondary data collection in order to know the obstacles and supporting factors during MR campaign in districts and province level.

The assessment of MR Immunization coverage had been done in 6 provinces with 60 clusters (30 cluster of urban and 30 cluster of rural areas) in each province with selected by PPS. Three thousands sample in each province had been randomly selected in order to measure the coverage. The survey had been conducted in July until first week of September 2018.

Result: MR immunization coverage in all province was ranging from 88-96% where the lowest found at West Java and the highest was at East Java. The MR coverage in urban area was ranging from 85,3%-95,5%and rural was ranging 86,9%-96,7%. The coverage in urban areas was lower than in rural areas in all provinces,except at Central Java.

Basic immuniation coverage in all provinces were: BCG (.>93%), DTP1 (92%), DTP2 (>87%), DTP3 (>82%), Polio1 (>93%), Polio 3(>87%), Polio4 (>76%) and Measles (>80%).

Based on in-depth interview the MR campaign in all provinces at Java island had achieved all the target. However some district had some obstacles related to human resources, logistic and budget allocation.

Chapter 1. Introduction

1.1   Backgrounds

The Expanded Program on Immunization (EPI) is a health intervention program designed by World Health Organization (WHO) in response to the high infant morbidity and mortality due to infectious diseases. WHO recommends immunization strategies to all countries through EPI program. Immunization of infants with measles vaccine, tetanus toxoid, hepatitis B vaccine, OPV for Poliomyelitis and DTP for diphtheria, pertussis, and tetanus are recommended to all countries. Indonesia had been implementing basic immunization as national immunization program formally since 1977 (1).

Indonesia started with measles reduction since 2009 by conducting school immunization for measles and started with second doses measles in 2015. Those immunizations expectedly will reduce measles diseases infection in the country and accelerate the measles elimination in the country. Measles school immunization coverage was reported successfull with coverage more than 90%, but second dose measles had still low coverage after two years program implemented (1).

In 66th meeting of SEAR Regional Committee in September 2013 in New Delhi reesolved to adopt the goal of measles elimination and rubella/CRS control in Suth Eash Asia Region by 2020. In order to acheived the regional goals, some objectives will be adressed are: i)Achieve and maintain at lease 95% population imunity with two dose againts measles and rubella within each district of each country in region through routine/or supplementary immunization. ii)develop and sustain and timely case-based measles and rubella and congenital rubella syndrome (CRS) surveillance sysstem in each country in the region that fulfils recommended surveillance performance indicators. iii)develop and naintain a WHO proficient measels and rubella laboratory network that support every country in the region. iv)Sthrenthen support and linkages to achieve the above three strategic objectives (2).

Indonesia had commited and adopted the goal of measles elimination and rubella/CRS control in Suth Eash Asia Region by 2020. In order to achive measles elimination by the year 2020 some activities will be done, which are (2):

o Indonesia has national measles elimination and rubella/CRS control by 2020 by conducting some objectives,which are: i)first dose measles coverage at leas 95% nationally by 2018. ii) second dose vacinnation coveage at least 95% in 2019. iii) Measles campaign at high risk areas at the end of 2016 targeting children 9-59 month.

o National MR Campaign in 2018- 2019 targeting 9 month – 15 years prior to MR introduction to National Immunization Program

o Fully investigated all detected/reported measles outbreaks

▪ Case based measles surveillance: 50% specimens tested by 2016 • 100 % specimen tested by 2020

o CRS Surveillance initiated at selected hospital in 10 provinces in 2015 and will be expanded to the remaining provinces in 2017 - 2019

MR campaign had been done in all provinces in Java island (West Java, Banten, DKI Jakarta, DI Yogyakarta, Central Java and East java) on September 2017. In 2018 the MR campaign will be conducted for all provinces out of Java Island for all rest of provinces in Indonesia. The reported MR immunization coverage during the campaign at all provinces at Java island in the following :

Table 1.1. MR Immunization Reported Coverage at All Provinces at Java Island

No.	Province	No.Target Population		Coverage	Percent (%)	
		Daerah	Pusdatin		% at Province	% based on Pusdatin
1	DKI Jakarta	2.446.572	2.446.571	2.389.635	97,67	97,67
2	West Java	12.151.435	12.112.181	11.801.654	97,20	97,44
3	Central Java	8.224.081	7.839.325	8.202.838	99,74	104,64
4	DI Yogyakarta	771.297	775.484	760.137	98,55	98,02
5	East Java	9.048.794	8.468.640	8.970.258	99,13	105,92
6	Banten	3.322.201	3.322.185	3.182.626	95,80	95,80
Java Island		**35.954.380**	**34.964.386**	**35.307.158**	**98,20**	**100,98**

Based on Table 1.1 above the MR immunization coverage during the campaign was more than 95% at all provinces. However, before the MR campaign out Java island, evaluation of MR campaign in Java island may be conducted in order to know the real MR immunization coverage in the population and the obstacles during MR campaign in the field at all provinces

at Java island. This evaluation (survey) will help better plan for the MR campaign in the rest of Indonesia scheduled for 2018.

1.2   Objectives

1.2.1   General Objectives

To measure provincial MR immunization coverage among children 9 month to 15 years old at the time of the 2017 campaign in the community at all provinces in Java islands (West Java, Banten, DKI Jakarta, DI Yogyakarta, Central Java and East Java) and to know the obstacles of MR campaign in the field.

1.2.2   Specific Objectives

i.   To measure MR campaign (SIA MR) immunization coverage in the community at province level (West Java, Banten, DKI Jakarta, DI Yogyakarta, Central Java and East Java).

ii.   Assess SIA MR Vaccination coverage by rural/urban, sex, length of residency in the area and other demographic characteristics.

iii.   To know the obstacles of MR campaign at province level at all provinces.

iv.   To know basic immunization coverage among children under five.

v.   To give recommendations to National and province EPI program in order to do MR immunization in the rest of the provinces.

1.3   Output of the Survey

i.   Province MR survey and reported coverage for each province (Banten, DKI Jakarta, Central Java, DI Yogyakarta and East Java and West Java).

ii.   Total (Java island) MR survey (coverage and confidence intervals) and reported coverage.

iii.   Factors associated with MR campaign implementation and its obstacles during its planning and implementation.

iv.   Disemination of Survey results in the province (local dissemination) and at national level.

v.   Publication of the survey results at national and international jounal or bulletin.

1.4 Time Frame of the Survey

The survey was conducted in the first quater of the year 2018 or 4-5 months after MR campaign where MR campaign had been completed in 6 provinces at Java island in Indonesia. The MR campaign in Java Island (at 6 provinces) was done in September to October 2017.

1.5 The Location of Survey

The immunization coverage survey was conducted in all 6 provinces at Java Island in Indonesia. The results of the survey would reflect the immunization coverage of MR immunization coverage for each province. The study were located at:

a) West Java
b) Banten
c) DKI Jakarta
d) DI Yogyakarta
e) Central Java
f) East Java

1.6 Organization

The survey was organized by Public Health Faculty Government Universities at Java Island which are: Universitas Indonesia covered West Java, Banten and DKI Jakarta provinces, University of Diponegoro covered Central Java and DI Yogyakarta and University of Airlangga covered East Java province.

1.7 Limitation of the Study

a. The survey is cross sectional survey, therefore this survey would describe current situation.

b. Immunization status of children were assessed by interviewing mothers or caregivers, validated by KMS, Buku KIA, Puskesmas registration record on registry at the school.

c. Recall bias might occurred because the last MR campaign was conducted in September 2017 and the survey was conducted in February 2018.

d. Using cluster sampling technique in coverage survey, might raise the representativeness issue if the selected clusters accidentally clumped in a few areas or if proper probability sampling techniques are not implemented.

1.8 Budget

Budget for the studies funded by WHO Indonesia collaborated with National EPI program MoH RI.

Chapter II.   Conceptual Assessment and Variables

2.1.   Conceptual Framework

The assessment conceptual framework follows Lawrence Green, health believed models and performance framework as follow (3a):
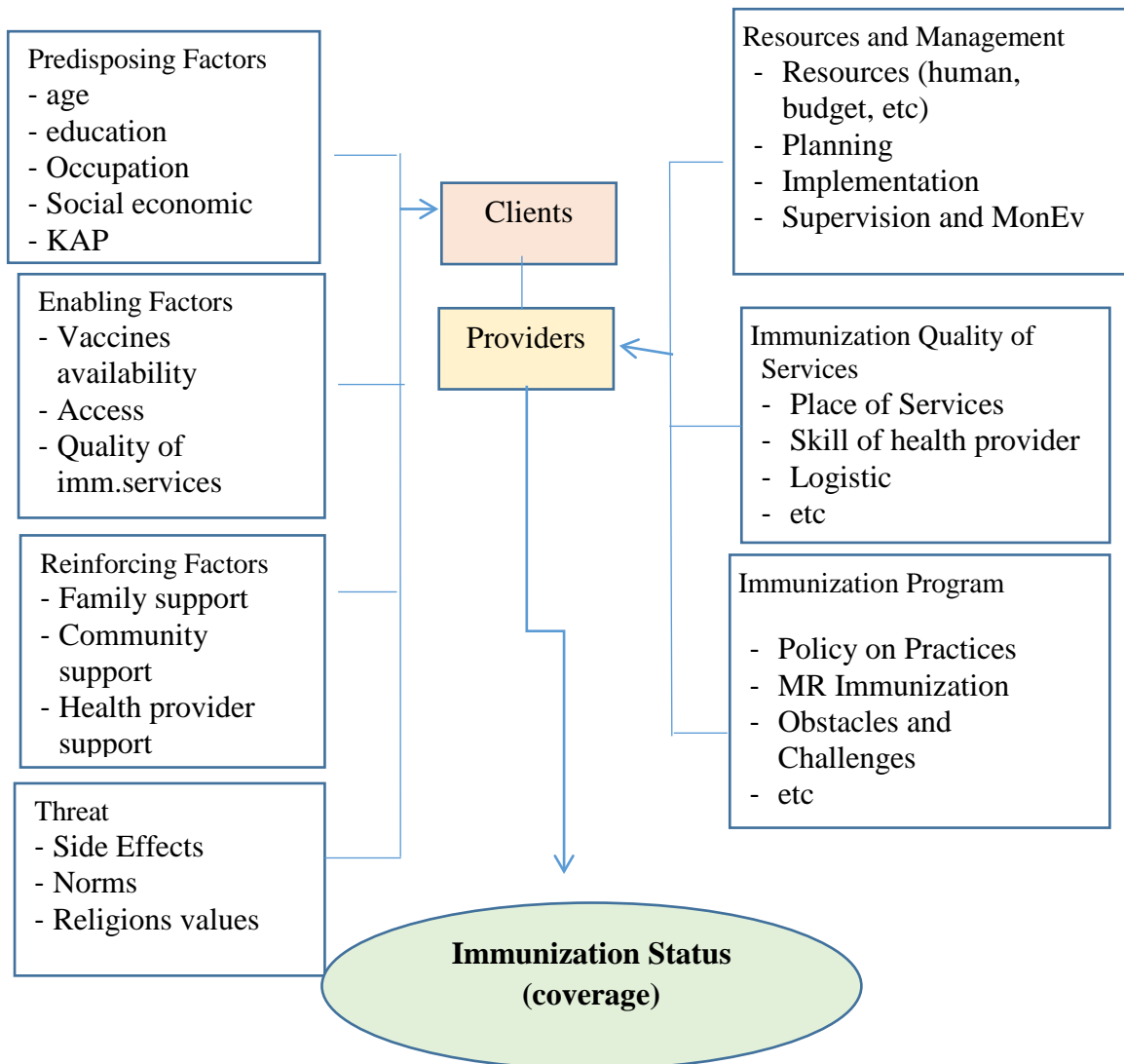
Figure 2.1. Cenceptual Framework

Based on the conceptual framework above, the immunization status of the children affected by two factors which are: i) the children factors (demand side) and ii)providers factors (supply side). The children factors would be depended on four factors: predisposing, enabling, reinforcing, and threat. Where the providers factors were depended on: resource and management, quality of immunization services and policy and obstacles in the field during MR campaign.

2.2. Variables Information

2.3.1. Variables

All information (variables) gathered in this assessment as follow: Health Believe Models and Lawrence Green:

MR Immunization Status

- Status of MR immunization of children 9 months to less than 15 years old during MR Campaign in Java island

Immunization Program

- Policy in immunization program practices at local areas
- Organization and the man power
- Obstacles in immunization program

Resources and Management

- Resources (man power, manuals, hardware and software, facilities, etc)
- Training on immunization
- Immunization program services activities
- Management of cold chain and logistics
- Recording and reporting of immunization

Quality of Services

- Process in immunization program services
- Place of services
- Skill of heath personnel
- Hospitality of health personnel
- Cost of services

Predisposing Factors

- Age of parents
- Education attainment of parents
- Knowledge, attitudes and practices (KAP) of mother or caregiver
- Social Economic, etc

Enabling Factors

- Vaccines availability
- Access
- Quality of immunization services

Reinforcing Factors

- Parent support
- Community support

Threat

- Side Effect Experiences
- Norms and Cultures
- Religions values
- Access
- Working mother
- Parental knowledge on Immunization benefit

Chapter III. Methods

3.1. Study Approach

This study used cross sectional study design by combining between quantitative (province coverage survey) and qualitative approach (Rapid Assessment Procedure (RAP)). The survey (coverage survey) using WHO followed WHO manual for Immunization Coveage Survey 2015[1] to describe immunization coverage in the study areas. The qualitative approach used indepth interview, observation and secondary data collection in order to know the obstacles during MR campaign at province level and among health workers in districts.

A.   Quantitative Approach (Coverage Survey)

The immunization coverage survey used a cluster sampling technique which follows WHO reference manual of immunization coverage cluster survey 2015. Sample for the survey were selected using urban/rural stratification in each province, and then a three stage sampling design. In each strata, urban or rural in each province, 30 clusters (villages and kelurahan) in each strata were randomly selected using probability proportional to estimated size (PPES). Then, in each selected cluster, a list of households done by a separate team. From this list of HHs, 50 households were randomly selected by the survey coordinators in the office (and not by field teams to avoid selection biases) as recommended by the 2015 WHO Survey Manual. All selected HHs whose children 12 to 59 months of age and 5-15 years old were contacted and then would be interviewed. All probabilities of selection (of clusters, of HHs in each cluster, and of eligible persons among all those eligible in a HHs) were collected to allow for calculating design weights, plus the outcome of each HH visit to correct for non-response. This information is needed to conduct weighted analysis, to ensure representativeness, as recommended by the 2015 WHO Vaccination Coverage Survey Manual (3).

Province MR immunization coverage survey would be reflected by the prevalence of immunized children 12-59 months of age and children 5-15 years old (and also total children 9 months to 15 years old) in the province . The MR immunization status of children based on recall of the mothers/caregivers and the children (especially for children 5-15 years old). Probing questions as reminders to reduce recall bias were used in the survey. The reminder

---

[1] Available at: http://www.who.int/immunization/monitoring_surveillance/routine/coverage/en/index2.html (under resources)

was "Measles-Rubella", rubella vaccination and the ink used to the one finger and done during September to October 2017. This immunization status, for measles-containing vaccines in routine among children aged 12-59 months, would be compared with register of immunization status at health centers.

3.2. Location

The coverage survey were conducted at all provinces at Java island (6 provinces), which are:

a) West Java

b) Banten

c) DKI Jakarta

d) DI Yogyakarta

e) Central Java

f) East Java

3.3. Population and Sample

Target population MR immunization coverage survey is children 9-49 months and 5-15 years old living at the province. The population for each immunization coverage survey can be seen in the following Table.

Table. 3.1. Population of children less than 15 years old for all provinces

Provinces	Children 0-4 y.o and below	Children 5-9 years old	Children 10-15 years old	Total	Proportion CUF/% y.o above
West Java	4,475,229	4,261,650	4,242,322	12,979,201	52,6
DKI Jakarta	945,955	847,117	730,643	2,523,715	60,0
Banten	1,229,320	1,154,193	1,043,983	3,417,496	55,9
Central Java	2,745,813	2,787,167	2,795,672	8,328,652	49,2
DI Yogyakarta	274,200	266,700	262,500	803,400	51,8
East Java	2,929,890	3,033,205	3,046,481	9,009,576	48,2

The samples in the survey are: the children 12-59 months and 5-15 years old living at the selected clusters (villages and kelurahan) are the target population from which the sample were drawn. Proportion of children under five compared to children 5 to 15 years old was 48-

60% in the 6 provinces at java island, the highest found at DKI Jakarta and the lowest was at East Java province.

3.4. Sample Size

In WHO coverage cluster survey manual 2015(3), sample size may be calculated with the specific formula of sample size for small proportion since the coverage of MR in Java islands was more than 95%, therefore the proportion unvaccinated children because very small, therefore, here the sample size may be calculated using the formula.

The sample size is calculated by identifying a set of five numbers to multiply together: A x B x C x D x E.[2] With all parameters are explained below,
where: A= Number of strata

B= Sample size per stratum (the *effective sample size)*

C= Design effect (DEFF)

D= Average number of households that needed to visit

E=Expected non-response due to persons not being at home after at least two revisits, or eligible person s who refuse to participate.

By considering urban and rural area in the provinces at Java island were vary according to MR coverage, social economic status, education attaintment, etc, therefore in this coverage survey 2 strata (urban and rural) was defined in order to acticipate the variation of urban and rural in each province of 6 provinces at Java island.

In order to calculate the Effective Sample Size (ESS) the formula from Fleis in WHO manual for coverage survey is in the following:

$$n \geq \frac{k \, z_{1-\alpha/2}^2}{4d^2} + \frac{1}{d} - 2 \, z_{1-\alpha/2}^2 + \frac{z_{1-\alpha/2} + 2}{k}$$

where z_{1-x} is the standard normal distribution evaluated at $1-x$ and d is the desired half-width of the confidence interval (for example, if you want the confidence interval to be no wider than ± 10%, then $d = 0.1$). If $d \leq 0.3$, then k is calculated according to Table K, where

---

[2] WHO, Vaccination Coverage Cluster Surveys: rReference Manual, World Health Organization, Working draft, 2015

p refers to the expected coverage proportion. If *d* > 0.3 or if *p* is unknown, then use the conservative where

k = 1.

The ESS does not change for coverage levels between 30% and 70%. When the coverage level is assumed to lie outside the interval [30%, 70%], then a value of *k* < 1 could be used to reduce the required effective sample size (see Table B-1 for examples). Suppose a 2-sided 95% confidence interval is desired with ±6% precision (d = 0.06). Also suppose that the coverage probability is expected to be around 95%. Using the value: k = 4(0.95-0.06) (1-0.95+0.06) = 0.3916 by using the formula above then the Efective Sample Size (ESS) was 131.

WHO also developed the sample calculation using excel software using the formula. Using the Excel software and considering some criterias (conservative considerations for intracluster correlation (ICC) which relates to the design effect,) in the sample calculation this study come up with the results: Total sample (AxBxC) was 875, total number of household to be visited 2,764 household to be visited (NcsxDxE) at both stratum (urban and rural). Number of household for each statum (BxCxDxE) was 1,382 household. Number of cluster per stratum 30 (for each urban and rural) (BxC/m) and number of household per cluster (DxExm) = 48 and total cluster 60 clusters. In order to anticipate non response rate the sample size would be round up to be 1500 for each strata. As results from both sample size consideration with probability sampling and sample size with small proportion, then sample size in this study 30 clusters for each strata (urban and rural) and 50 household in each and the total sample were 3000 households.

Among children aged 12-59 months additional questioners for basic routine immunization coverage were also measure in this study. Therefore this population (children 12 months to 59 months) of age was considered as different group with children 5-15 years old. Number sample of those age-group in each strata had been proportionally in each province, Therefore the number of sample for agegroup in each strata in each province in the following Table:

Table. 3.3. Sample for Each Strata in Each province

Province	Strata	No Cluster	No.Sample per cluster	Total Sample (HHs)	Children 1-4 y.o	Children 5-15 y.o.
West Java	Urban	30	50	1500	789	711
	Rural	30	50	1500	789	711
DKI Jakarta	Urban	30	50	1500	900	600
	Rural	30	50	1500	900	600
Banten	Urban	30	50	1500	839	662
	Rural	30	50	1500	839	662
Central Java	Urban	30	50	1500	738	762
	Rural	30	50	1500	738	762
DI Yogyakarta	Urban	30	50	1500	777	723
	Rural	30	50	1500	777	723
East Java	Urban	30	50	1500	723	777
	Rural	30	50	1500	723	777

3.5. Province Coverage

The MR immunization coverage survey was done at all 6 provinces at Java island. The survey follow the WHO *Immunization coverage cluster survey – Reference manual[3]*. The survey methodology describe below:

3.5.1. Urban and Rural Strata

Urban in this coverage survey is all kelurahan (same with village at district) located at all "cities" in each province. Rural is all villages located at all "districts" at each province. City and district were differentiated based on the Central Statistics Bureau (BPS) data. Kelurahan and village are also based on the BPS data in Indonesia.

Then all kelurahan were stratified as urban village and all villages (desa) were stratified as rural strata. Thus, in each province were divided in to two groups of strata, those are urban villages and rural village.

---

[3] WHO, Vaccination Coverage Cluster Surveys: rReference Manual, World Health Organization, Working draft, 2015

3.5.2. Sampling frames

The sampling frame for the survey in the province were made up of based on list of village midviwes data at desa (village and kelurahan and village and RW or subvillage officer). All list of households in the selected kelurahan (first strata) and village (desa) (second strata) were being the sampling frame for the secondary sampling units of this survey. The analysis of two age-group population were presented by 12-59 months old and 5-15 years old. The supervisor are responsible to do a listing of households in each selected cluster before data collection.

3.5.3. Cluster (desa or kelurahan) selection

Survey clusters (*desa and or kelurahan*) were selected by systematic sampling with probability proportional to estimated population size (PPES) as one of the options presented in the WHO Manual[4]. The survey protocol specified surveys of 30 clusters using a *desa* as the primary sampling unit. Total number of children for children 12 months to 5-1years old at each village and kelurahan were collected and considered as sampling fraction for each cluster latter on in the analysis.

Provisions were made during the sampling with a list of additional *desa* to replace sampled *village (desa or kelurahan)* that could not be surveyed for:

   i.   Insecurity
   ii. Size in the case of very small islands
   iii. "Non existence" of the *desa* (this can happen due to administrative changes over time)
Any replacement were well documented.

3.5.4. Sampling Selection

Following WHO, Vaccination Coverage Cluster Surveys: Reference Manual, World Health Organization, Working draft, 2015 were already selected in two stages as follows:

i.   Selection of the cluster (village).

All the villages in the province were given a code number. It consists of several digits, starting with district code number, followed by sub-district code number and rank number of the villages. Then each village had specific number of cluster (village). Each village would be weighted based on the total population of the village. Therefore the village which have high population had bigger chance to be randomly selected. Hence, the selection of cluster

---

[4] World Health Organization. *Immunization coverage cluster survey – Reference manual.* WHO/IVB/04.23, Geneva, Switzerland

(village) uses Probability Proportionate to Estimated Size (PPES) sampling. By using PPS the sampling fraction of all clusters were similar or proportionally to size of their population. By using PPES sampling, 30 clusters (villages and kelurahan) in each strata were selected.

ii.   Selection of sample (Household)

After the 30 clusters (villages/*kelurahan*) were selected in the province, selection of 50 households in each cluster would be done after listing all HHs in the selected cluster. The random selection of the 50 HHs were already done by the central team. All households in the selected clusters were visited and listed all their houshold members. The HHs selected were marked in a map to be given to the teams, so that they identify clearly the pre-selected HHs and visit them to interview those with eligible persons. In the listing number of children under five and children 5-14 years old were separated. Number of children under five and children 5-14 years old were selected proportionally in each cluster.

If the listing of the children could not be available in the cluster, then number of children under five and children 5-14 years old should be known in order to detemine number of children underfive and children 5-14 years old proportionally to be be selected. Then number of children underfive and children 5-14 years old would be sampled based on interval (k) . The interval k determined by number of children available in cluster devided number of sampe of children in each cluster.

3.6.   Selection of Respondents

Any of the following household residents were eligible for inclusion in the survey:

- Having children 12-59 months of age and children 5-15 years who have slept in the HH the night before old
- Mother and caregiver of children is willing to be interviewed

3.7.   Listing household for the survey:

Pre-selected household with eligible children then were interviewed by enumerators for their MR immunization status using the tools that had been developed.

3.8. Revisit strategy:

Up to two revisits would be done as necessary to complete vaccination questionnaires as fully and accurately as possible. If a respondent is not present at the first visit, field team made up to once more visits to meet them. If a respondent is present at the first visit but the home-based record (for routine vaccination) is not available, then field team completed as much of the questionnaire as possible at the first visit and do up to two more visits to review the home-based record and complete the relevant section of the questionnaire. A 'mop up' revisit is also planned to be conducted on weekends and holidays, especially in the urban areas

B.   Qualitative Approach

3.9. Data Collection Methods

In qualitative approach, Rapid Assessment Procedure (RAP) was implementing to explore the obstacles during MR campaign by conducting several data collection method such as: in-depth interview, observation and secondary data analysis.

This assessment provided a comprehensive overview of the province's and district's obstacles during MR vaccination service during the campaign. The assessment focused on human resource issues (motivation factors, staff numbers, performance, accessibility, quality of services, etc) .

3.10. Key Informants and Tools

All the information required in this assessment (the obstacle during the campaign) were already gathered from some key informants in district and health center level use several data collection methods. The details informants and data collection methods can be seen in Table 2.1. belows:

Table 3.4. Key Informants and Data Collection Methods

N0	Level	Data Collection Methods	Tools
I	**Provinces**	Secondary data will be collected at all level	Check list of secondary data

1	Head of PHO	In-depth interview	Guideline for indepth
2	EPI managers at PHO	In-depth interview	Guideline for indepth
II	**District**		
1	Head of DHO	In-depth interview	Guideline for indepth
2	EPI managers at DHO	In-depth interview	Guideline for indepth
III	**Health Centers**		
1	Head of Health Center	In-depth interview	Guideline for indepth
2	EPI programer at HC	In-depth interview and observation	Guideline for indepth and check list
3	Health Center's Midwife	In-depth interview	Guideline for indepth
III	**Village**		
4	Health Cadres	In-depth interview	Guideline for indepth
5	Village Midvives	In-depth interview	Guideline for indepth
IV	**School**		
1	Teachers	In-depth interview	Guideline for indepth
2	Students	In-depth interview	Guideline for indepth

All key informants in province level were interviewed, however for key informants in district level, health centers and village were selected purposively based on some inclusion criteria which are

- MR coverage (low, medium and high)
- Problem during MR campaign implementation (hard and low)
- Distance to capital city of province and or district
- Some other related condition to the MR campaign implementation

3.11. Data Managements

3.11.1. Respondents

Respondents in the survey are mothers/caregiver whose eligible children were in the HHs sampled in the survey. The mothers/care giver were be interviewed to gather information related to the MR immunization status of the children.

All key informants at each level were in-depth interviewed regarding to obstacles of MR immunization during the campaign.

3.11.2. Interviewer

This study will be implemented through collaboration with local Public Health Faculty Government University at each provinces or Research organization. Data collection in the

field will be conducted by them. Hence, Research organization or all Public Health Faculty of the universities to be as researchers for province coverage survey in the province where the university or organization located. For each province 20-24 interviewers were recruited by researchers.

3.11.3. Training, Supervisors (Coordinators) and Interviewers

The researchers have been already trained by national team and enumerators were trained by researchers and assisted by the national team. The national team consisted Consultant, WHO staff and National EPI porgam staff. The trainings covered the following aspects:

- Objectives of MR immunization coverage.
- The concept of using cluster survey for the survey
- Structure of data collection tools and purpose of each item included in the tools
- Roles and responsibilities of the field team members
- Experienced to interviewer mother of eligible children

3.11.4. Instruments

Instruments (questionnaires) for the survey were developed by researchers and consultant by adopting the questionnaires from WHO Reference Manual Immunization Coverage Cluster Survey (annex H) and KPC (Knowledge Practice Coverage for Maternal and Child Health) and some coverage survey had done in Indonesia. The field tested were already held before used. The objectives of the field test are:

- To determine whether the questions are understandably
- To determine whether interviewers understand the questions and instructions
- To determine the time needed to locate an eligible child or mother and the time needed to gather information for one eligible child.
- To determine whether the team works are working smoothly
- To determine whether data collection tools allow for legible recording of data as they are collected.

3.11.5. Data Collection

Data were collected by enumerators by conducting interview with the mother of the children as the study sample. Data from each enumerator were cross-checked by the supervisors in the field. Any inconsistencies or incomplete information were dealt with accordingly before leaving the area. Complete questionnaires were cleaned and entered into the computer by data programmers. Data entry were double checked by data encoder and data manager. Data analysis were done for each provinces, and then collated together as a description of the country.

All results of qualitative approach (indept interview, observation) were written as field reported. Field report were translated to the matrix that tabulated by source of information and the topics or contents according to the information required for the study. Content analysis were done to explore the obstacles of MR immunization services during the campaign.

3.11.6. Immunization Status of children

Immunization status of children in the survey are determined by collecting MR immunization status during the campaign. During the campaign all children after immunized the health provider gave mark in the finger of children with 'marking ink'. Therefore to recall MR immunization status the interviews used questions about recall of a measles-rubella or rubella campaign, or recall of ink marking. All children immunized were registered at immunization registration book. Therefore all immunization status of children by recall were compared with recorded one in the registeration book.

3.12. Quality Control

i.   Preparatory

Province supervisors or coordinators are preparing the survey from: research permit from local government, the questionnaires, and all kits required for the survey. Advanced visit to the field were done by province coordinators to socialize the survey to the formal and informal community leaders.

ii.   Field Works

Province researchers coordinated all field works activities such as: to help the field team in determining the center of the area and supervise all field activities in order to control the quality of field works and to ensure that all field works will be done properly.

iii. Data quality control

Data were cross checked by interviewers where one interviewer checked the questionnaire that has been gathered by other interviewer and vice versa. Prior to data entry to the computer and analysis, the completeness and consistency of the data had already been checked by supervisor (province coordinator).

3.13. Organization

Potential bidders from survey organization were selected for the field implementation in each province. The survey team comprised of a team leader (project coordinator), researchers, field coordinators, enumerators and data manager.

3.14. Ethical Issues

Informed Consent were implemented before interview with all the respondents. Confidentiality of the data collected were maintained in each organization that conducted the survey. Identifying personal information were accessible only to the essential staff (researchers).

Data were not used in any publications, reports or media, without any permission from WHO, National EPI program and researchers due to the survey are funded by WHO with collaborated with National EPI program. Hence, all the data and report were submitted to WHO and National EPI program who have full authority to the the data and reports.

Ethical Approvals for the protocol were submitted to ethical commitee of Public Health Faculty Universitas Indonesia.

The database, data dictionary and code used for analysis will be shared with the National EPI and WHO in order to conduct further analyses if needed.

CHAPTER 4. RESULTS

4.1.   Data Collection Results

Among all 6 provinces both quantitative and qualitative assessment had been conducted from 1st July to last August 2018. The quantitative assessment were done by conducting coverage survey at province level. The coverage survey results at 6 provinces had fulfilled 3,000 sample, except for West Java province only 2996 samples due to difficulties of data collection in the field. For qualitative assessment all key informants had been indepth interviewed at all levels (Provinces, districts, health centers, health cadres and teachers in the school) as well as the written in the plan.

This study use multistage sampling methods, where the primary sampling unit was strata urban and rural district, the sscond sampling unit was village/keluarahan as a cluster and houshold with children less than 15 years old as the tersiary sampling unit. Therefore data analysis in this study used complex analysis by considering the stage and weight for the children in each cluster.

From the resuslts of complex analysis found that the standard error (SE) of the study ranging from 0.1 to 6.5 which reflected the pression of the study sample with 3,000 sample in each province was adequate to describe the picture of the province while for the total sample SE was ranging from 0.1 to 1.6. See Table 4.1 and 4.2 below.

Table4.1. Standard of Error for Some Variable in Total Sample

	Standard Error		
Variable	Urban	Rural	Total
Sex of Children	,8%	,8%	,6%
Place of Birth	,5%	1,6%	,6%
Citizenship of Respondents	,4%	,1%	,3%

Table4.2. Standard of Error for Some Variable in Each Province

Varible	Banten		DI Yogyakarta		DKI Jakarta		West Java		Central Java		East Java	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Sex	1,9%	1,8%	2,0%	1,7%	1,1%		1,6%	1,8%	1,4%	1,4%	1,9%	1,6%
Citizenship	2,9%	,4%	,4%	,2%	,3%		,9%	,3%	,1%	,2%	,3%	,2%
Place of Birth	2,6%	6,5%	,6%	,7%	2,2%	NA	2,4%	4,1%	1,9%	3,5%	1,4%	1,4%

4.2. Respondent's Characteristics

During data collection in the study, mothers of the children were expected to be the respondents in the study. By interviewed the mothers the study might have valid information on the immunization history of their children, while the study would also measure the KAP of the mothers.
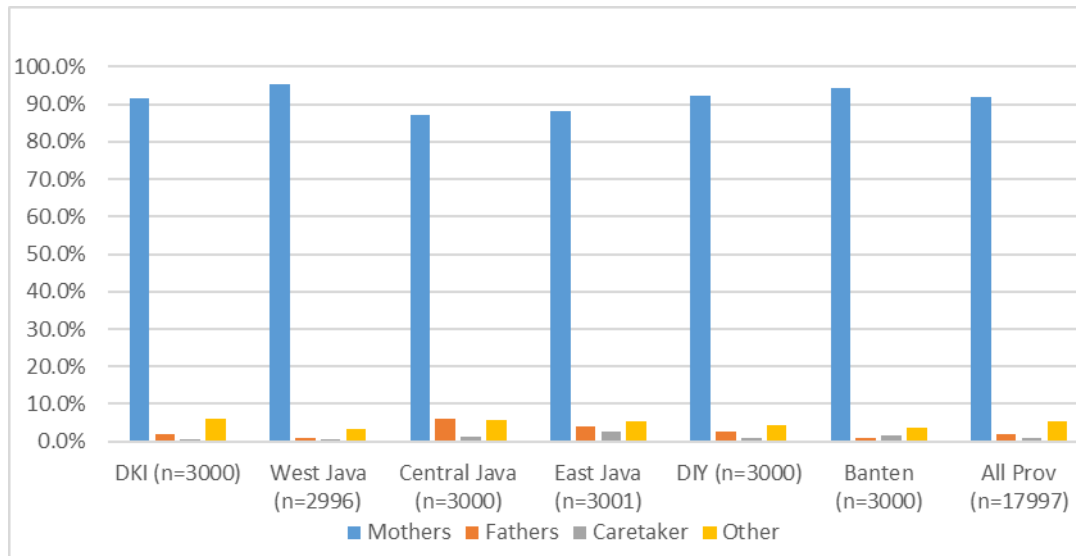
Figure 4.1. Respondent Relationship with The Children

Figure 4.1. above shows almost 90% of respondents were mothers of the children, except at Central Java and East Java (both were 88%). Less than 10% the reespondents were fathers and children caretakers (4-6% and 1-2% respectively). Hence all information on immunization of the children expectedly to describe valid information.

Citizenship status of respondents were measured in the study in order to ensure whether the household selected were the study population or study sample.
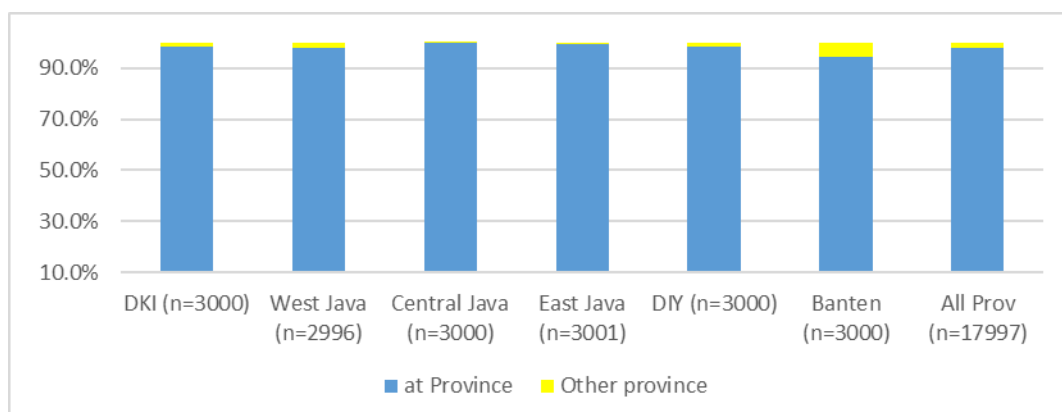
Figure 4.2. Status of Citizzenship of Respondents

Figure 4.2 above shows that more than 97% of respondents were local citizenship for each province. Since the study objective were measuring the MR coverage survey in province level, then the results of the coverage will reflected the coverage of the province.
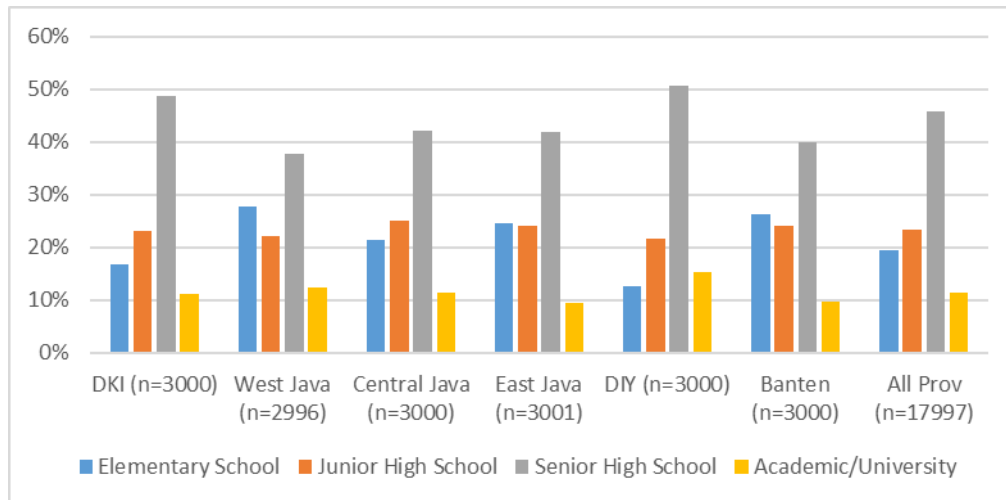
Figure 4.3. Education Level of Respondents

Figure 4.3. shows that proportion of respondents with senior high school was highest (more than 38%) in all provinces compared to other education attaintment. The lowest was the proportion of respondent with academic/university education attaintment (less than 12%) in all provinces. By looking this respondent's education attaintment, it was expected that all questions in the questionaires would be understood by respondent dan all information may correctly respons by respondents.
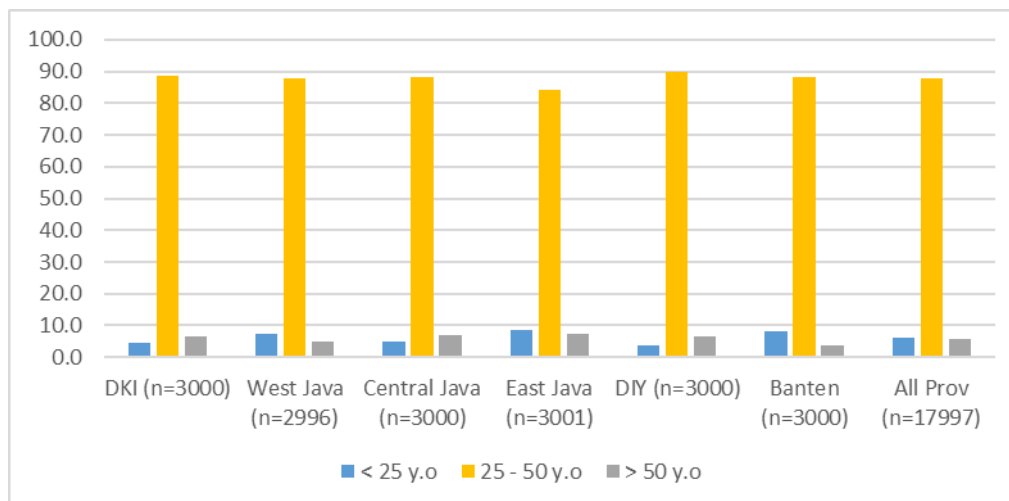
Figure 4.4. Agegroup Distribution of Respondents

Majority of resppondents in all province (more than 80%) were aged 25-50 y.o, while only less than 2% respondents were age less than 25 y.o. This study showed that all mothers majority were still reproductive age. The study were also showed that very rare mothers with children less than 15 years old less 25 y.o which may reflected proportion of early married women.

4.3. Children Characteristics

The characteristic of children were assessed in the study as factor associated to the immunization status of the children. All important variables of chldren characteristic are describe as follows:
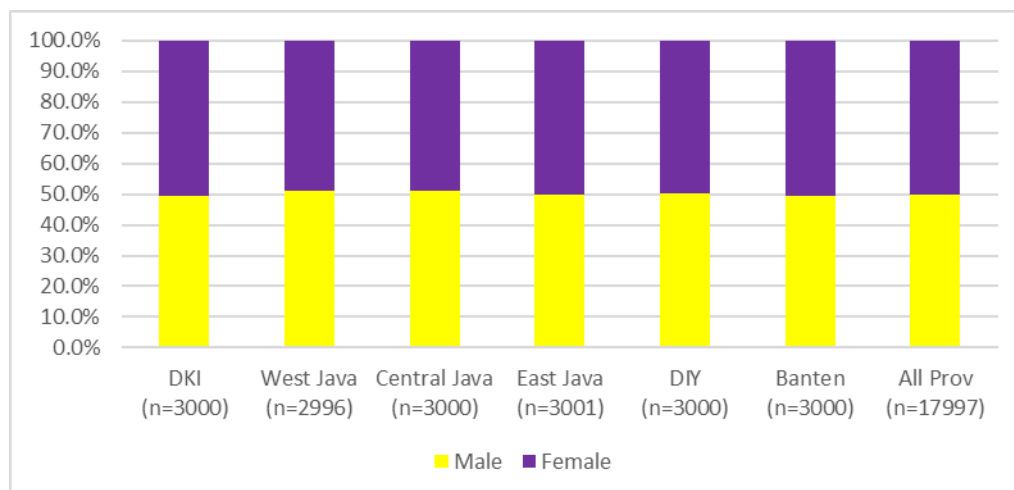
Figure 4.5. Sex Distribution of Children

The figure above shows that the sex proportion in all provinces are likely to be similar, where the proportion of female and male children approaching 50%. This picture shows that the sex ratio male and female children in all province almost 1:1. This sex ratio are similar with the sex ratio of total population in all provinces in Indonesia. This sample sex distribution reflected that the sample in this study in all provinces were randomly selected.
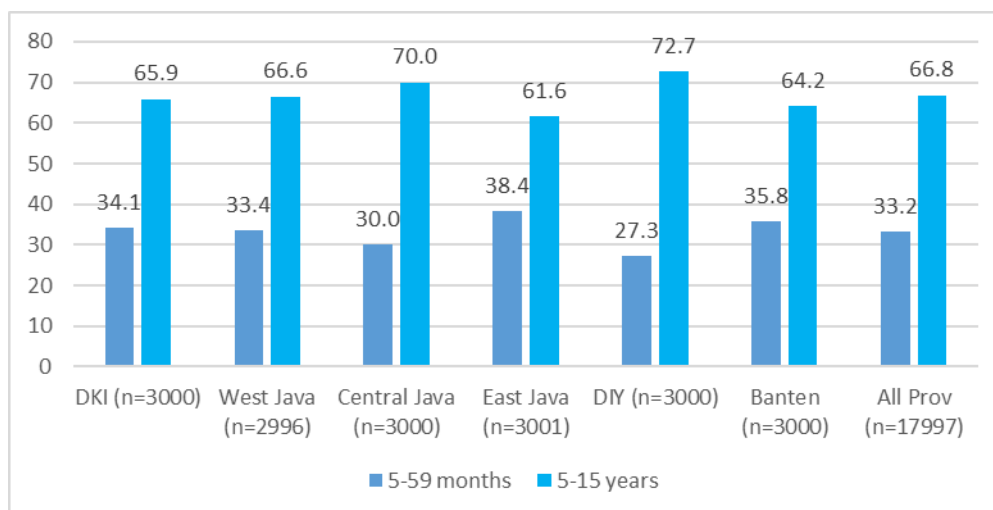
Figure 4.6. Number of CUF and Children 5-15 y.o in The HH

The agegroup of children in the sampling selection methods was selected proportionally betwween children 9-59 months of age (CUF) and children 5-14 y.o according the size of their population in the cluster. Therefore in all provinces shows the proportion of CUF and 5-14 y.o are likely to be similar. The proportion of children CUF and 5-14 y.o was ranging 30% and 70% respectively. This proportion reflected the proportion of CUF and 5-14.y.o in each selected cluster in all province are similar with the distribution of the proportion in this sample of the study.

4.4. Vaccination Card and Other Related Children Information

Vaccination card and BCG scar are written and sign evidences that the children had been immunized for any vaccines and BCG vaccine. In this study both the information were collected in order the study have better evidence for children immunization status compared to history of immunization from mothers interview. However, in this study only CUF that more likely to have the immunization cards. The proportion of children have immunization cards and BCG scar can be seen below.
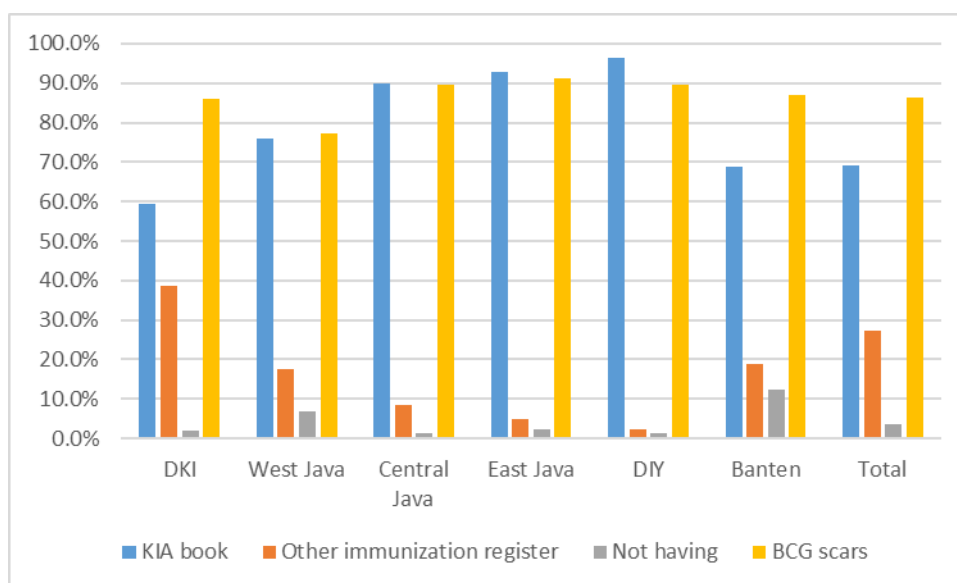
The figure above shows that average children who had KIA book in all provinces are 69,2%. Where the highest proportion found at Di Yogyakarta followed by East Java and Central Java, and the lowest found at DKI Jakarta followed by Banten. BCG scars in all provinces found around 86% in average, the lowest found at West Java province and East Java as the highest one.

4.5. Basic Immunization Coverage

This MR coverage evaluation in Java islands objective are to measure MR coverage at 6 provinces at the island. However, this coverage survey are also to measure basic immunization among CUF while the population study was children 9 months of age to 14 years old. Therefore the basic immunization coverage were being measured among CUF. The ressults of basic immunization coverage among CUF as follows:
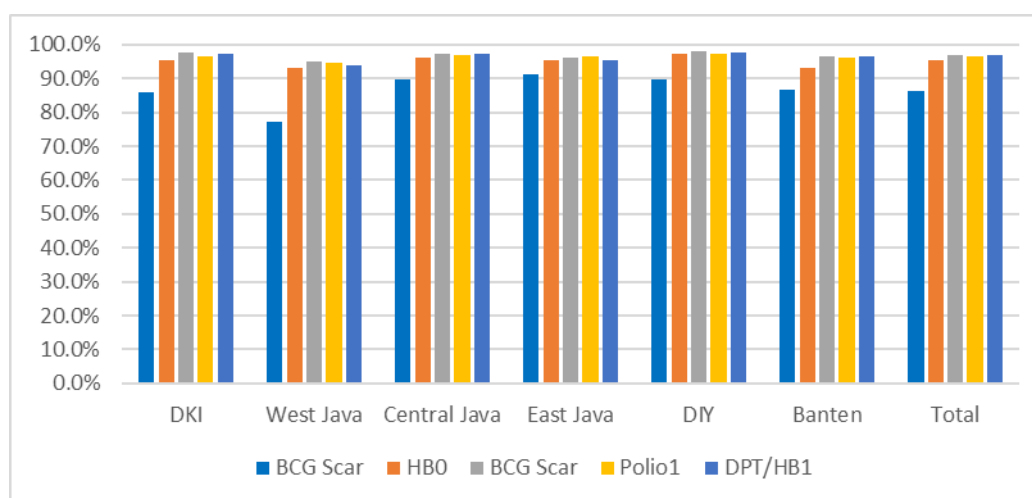
Figure 4.11. Coverage of Immunization of BCG, HB0, Polio 1 and DPT1
(First Dose Contact)

The figure above shows basic immunization coverage for the first contact such as: BCG, HB0, Polio 1, and DPT/HB 1(first dose contact). The coverage of BCG had already reached more than 95%, however BCG was vary from 78% to 90% where the lowest found (78%) was at West Java and the highest was found (90%) at Central Java. Meanwhile Polio 1 and DPT/HB1 coverages had already reached more than 95% at all provinces.
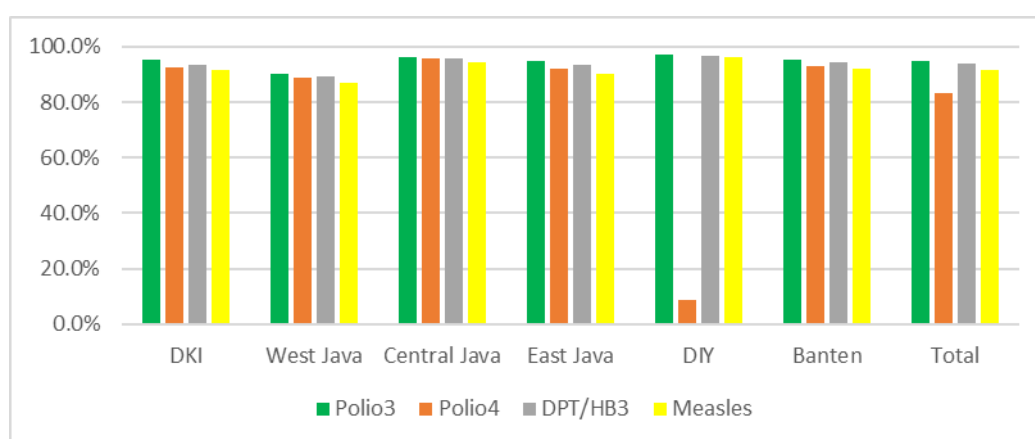
Figure 4.12. Coverage of Immunization of, Polio 3, Polio 4 and DPT/HB 3 and Measles
(Last DoseContact)

The immunization coverage for Polio 3, Polio 4, DPT/HB 3 and Measles (Last dose Contact) among CUF for the last dose contact shows that Polio 3 and Polio 4 had already reached 90% except at West Java (85%) and East Java (90%). Meanwhile immunization coverage for DPT/HB 3 had already more than 90%, except for West Java (more than 85%).

As summary of basic immunization coverage all children under five years old were classifed: completed immunization if all vacciines (BCG, Polio 1, DPT/HB 1, Polio 2, DPT/HB2, Polio 3, DPT/HB 3 and Measles) had been immunized to the children. Partial if any one of vaccine not yet immunized and Not Immunized at all if the children had not immunized with any vaccines at all. The results of summary of basic immunization of CUF as seen in Figure 4.13. below
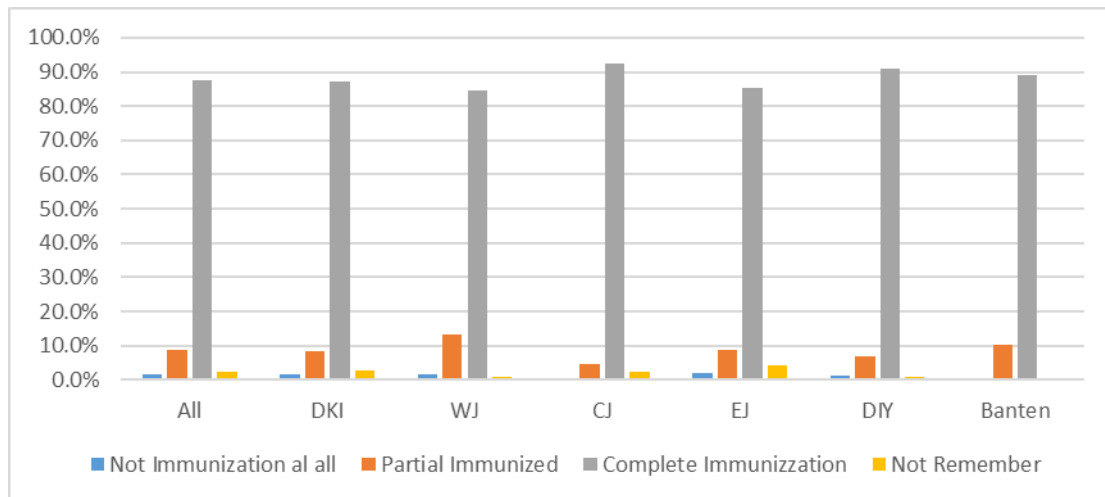
Figure 4.13. Summary of Basic Immunization Coverage

Immunization coverage for completed immunization at all provinces had already reached more than 80% at all provinces, where the highest was at West Java and East Java (84%) and the highest was Centaral Java (92%). In other versa, the proportion of children not immunized at all was ranging from 3-12%, where the lowest was Central Java (3%) and the highest was West Java (10%).

Valid coverage for basic immunization was measured based on date on immunization with date of birth of date for all vaccines. Here valid coverage refered if the immunization given to the children during the schedule and the true interval (4). For example measles vaccine should be given once when children aged 9-11 months of age. DPT 1 given when the children age 2-3 months of age with the interval for DPT 2 not less than 30 days. The valid coverage of all vaccines can be seen in the figure below:
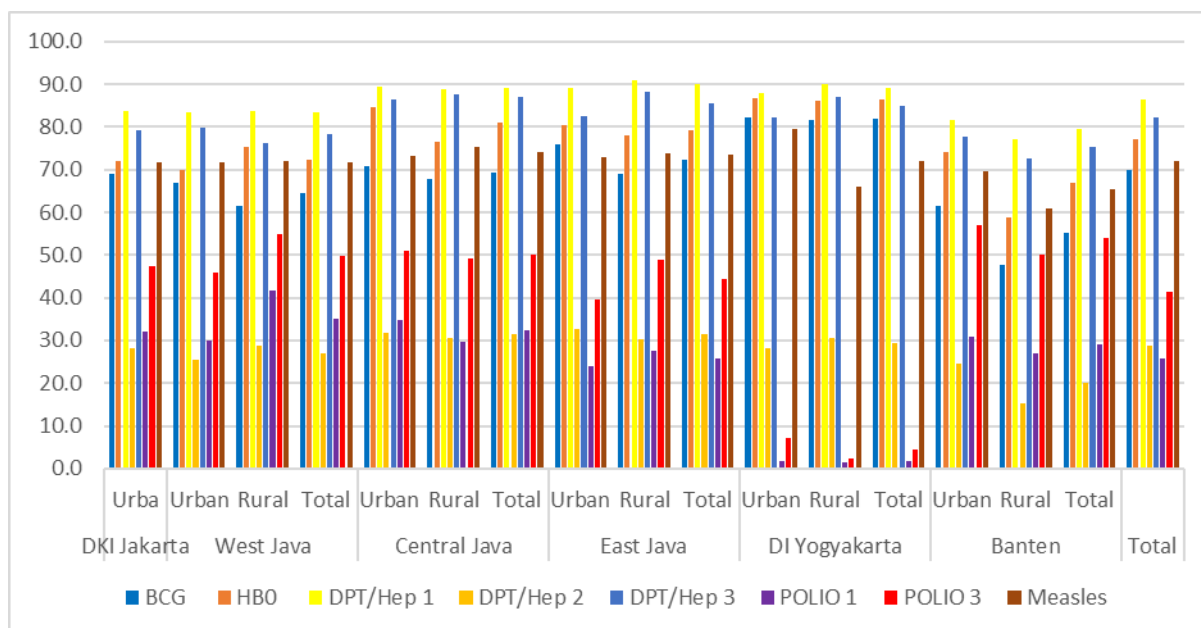
Figure 4.14. Basic Immunization Coverage

The valid coverage for BCG in all provinces ranging from 75% to 85%. This BCG coverage compared to crude coverage one was different. The diference between the crude and valid coverage in average was 10% at all provinces. Measles valid coverage found to be similar with BCG one. The diference between measles crude and valid coverage in average was 10% at all provinces. This shows that there was different between valid and true coverage for all vaccines at all provinces in average 10% and it would cause the immunity effect of immunization to the children might be less then the reported coverage.

Among those childdren who did not immunized both partialy and not immunized at all, the study asked the reasons for not immunized to the children. For basic immunization the questionaires refered to WHO manuals of coverage survey 2015.

Table. 4.4. Reasons for Not Immunized on Basic Immunization

REASONS	All	DKI	WJ	CJ	EJ	DIY	Banten
A. LESS INFORMATION.							
A. Less need to benefit of Immunization	19,5	10,4	27,7	9,7	35,8	10,8	27,0
B. Less need to immunized for the second and later dose	8,0	6,0	9,0	3,2	10,1	3,1	17,8
C. Did not know schedule and place of immunization	7,2	7,5	8,4	4,8	8,2	4,6	10,5
D. Afraid with Side Effect	14,8	4,5	15,1	16,1	8,8	7,7	32,2
E. Wrong Perception on immunization	3,3	3,7	3,0	1,6	1,3	6,2	4,6
Z. Others	10,0	5,2	19,3	4,8	9,4	3,1	9,9

REASONS	All	DKI	WJ	CJ	EJ	DIY	Banten
A. LESS INFORMATION.							
B. LESS MOTIVATION.							
A. Cancelation to next Schedule	17,2	16,4	16,9	12,9	10,1	7,7	31,6
B. Not Believe on Immunization (halal/haran)	5,3	3,7	7,2	1,6	3,8	3,1	8,6
C. Issues on Immunization	7,5	6,7	8,4	3,2	6,3	3,1	11,8
Z. Others	5,4	2,2	10,2	3,2	1,9	0,0	9,9
C. OBSTACLES.							
A. Distance to immunization place	4,3	1,5	10,8	1,6	2,5	0,0	4,6
B. Unmatch Schedule of Immunization	4,9	7,5	3,0	1,6	5,0	6,2	5,3
C. Provider was not available	1,4	1,5	1,8	0,0	0,0	0,0	3,3
D. Vaccines was not alvailable	1,2	0,0	0,0	0,0	5,0	0,0	0,7
E. Mothers busy	5,3	5,2	5,4	6,5	2,5	1,5	9,2
F. Family problem	2,0	1,5	0,0	3,2	1,3	4,6	3,9
G. Children get sick	21,0	27,6	27,7	21,0	6,9	6,2	28,9
H. Miss opportunity	13,3	15,7	16,3	12,9	9,4	1,5	17,1
I. Long waiting time	0,7	2,2	0,6	1,6	0,0	0,0	0,0
J. Cost of immunization	0,4	0,7	0,6	0,0	0,0	1,5	0,0
Z. Others	18,4	23,9	12,7	11,3	18,9	4,6	28,3

From Table above shows that the highest proporrtion of reasons for children to be not immunized was mother had less need to benefit of immunization followed by cancelation to next schedule and afraid with side effect. The proportion of mothers that were not believe on immunization was ranging from 1,6 to 8,6 where the highest at East Java Province and the lowest at Central Java. Now this issues become national issues after data collection of MR evaluation done at all provinces at Java Island. Proportion of others as reasons for not immunized was also high might be happened due to all reasons if it was not classified into any reasons then it would be classified into the reason (others).

4.6.   MR Immuunization Coverage

As the main objective of MR coverage evaluation in all provinces at Java island, the MR immunization coverage was the important point of this report. Therefore in this report the Table below shows the MR coverage at all provinces, 95% confidence interval and Standard Error (SE) of the sample survey. The 95% confidence interval reflected the probability of the

coverage in population. While SE reflected the pression of the results using the sample size, hence SE would reflected the adequacy and accuracy of the sample size used in the study.

Table. 4.5. MR Immunization Coverage in 6 Provinces at Java Island

Province	Coverage MR	95% Confidence Interval		SE
Banten	95,6%	94,1%	96,7%	0,7%
DI Yogyakarta	96,0%	94,9%	96,8%	0,5%
DKI Jakarta	91,2%	89,4%	92,7%	0,8%
West Java	86,9%	78,9%	92,1%	3,3%
Central Java	92,0%	88,5%	94,4%	1,5%
East Java	96,0%	94,3%	97,1%	0,7%
Total	91,9%	90,6%	93,1%	0,6%

The MR coverage in all provinces at Java island was ranging from 86,9% to 96%, where the highest found at East Java and the lowest at West Java. By looking to this MR coverage results all the provinces reported coverage as mentioned in the introduction of this report are higher than the survey results. Thi over estimated of reported coverage could be caused by the underestimated the target of MR campaign both PUSDATIN Data local province data . All the provinces reported coverage are also out of 95% confidence interval meaning that all provinces reported coverage did not reflected the real coverage in the population while 95% confidence interval reflected the probability of coverage in population. The standard error shows that the sample size for each population were adequate to measure all the coverage with very smal standard error (less than 5%).

The MR coverage in this evaluation would be differentiated by urban rural and also by age group of children since this survey coverage implemented among children 9 months of age to 14 years old. Here, the age group were devided to be 2 age group 9-59 months of age and 5-14 years old. The MR coverage among the agegroup can be seen in Figure 4.15. below.

In the figure shows that the coverage among the 2 group more likely to be the children 9-59 months of age was slightly lower too the coverage among children 5-14 years old all provinces at Java islands
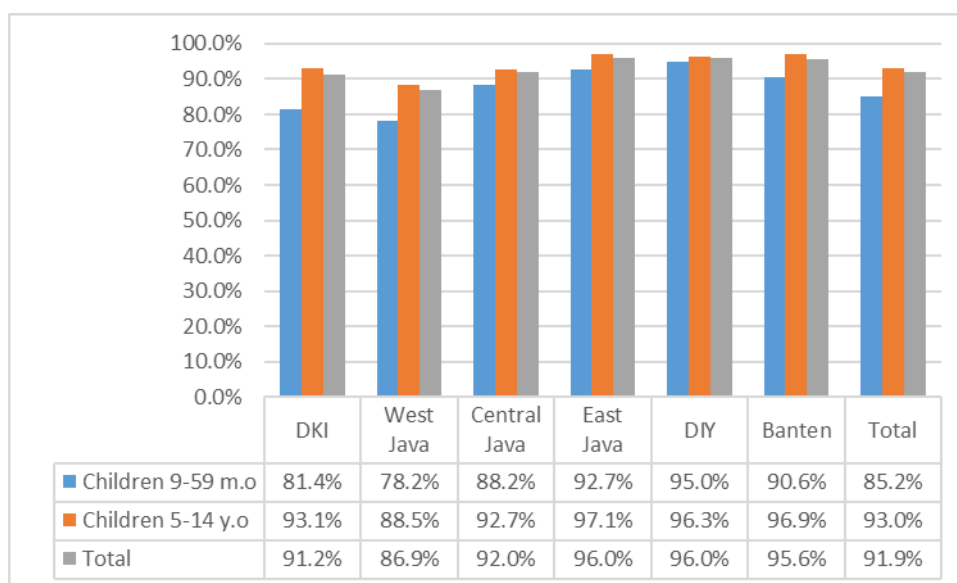
	DKI	West Java	Central Java	East Java	DIY	Banten	Total
■ Children 9-59 m.o	81.4%	78.2%	88.2%	92.7%	95.0%	90.6%	85.2%
■ Children 5-14 y.o	93.1%	88.5%	92.7%	97.1%	96.3%	96.9%	93.0%
■ Total	91.2%	86.9%	92.0%	96.0%	96.0%	95.6%	91.9%

Figure 4.15. MR Immunization Coverage by Age Group

When MR immunization coverage among children 9-59 months of age rangin 78-95% where the highest found at DI Yogyakarta and the lowest was at West Java. Meanwhile the MR immunization coverage among children 5-14 years old in all provinces ranging from 88.5% to 97% where the highest found at East Java and the lowest was West Java. The coverage among the agegroup shows that implementation of MR campaign among children 5-14 years old at school was a little bite better than among CUF (9-59 months of age). This reflected that school immunization coverage was easier to be covered compared to the CUF.

The MR immunization coverage was also divided into urban-rural in order to describe the effort or performance of MR campaign in urban and rural area of the province. The results of MR campaign in those are can be seen below:

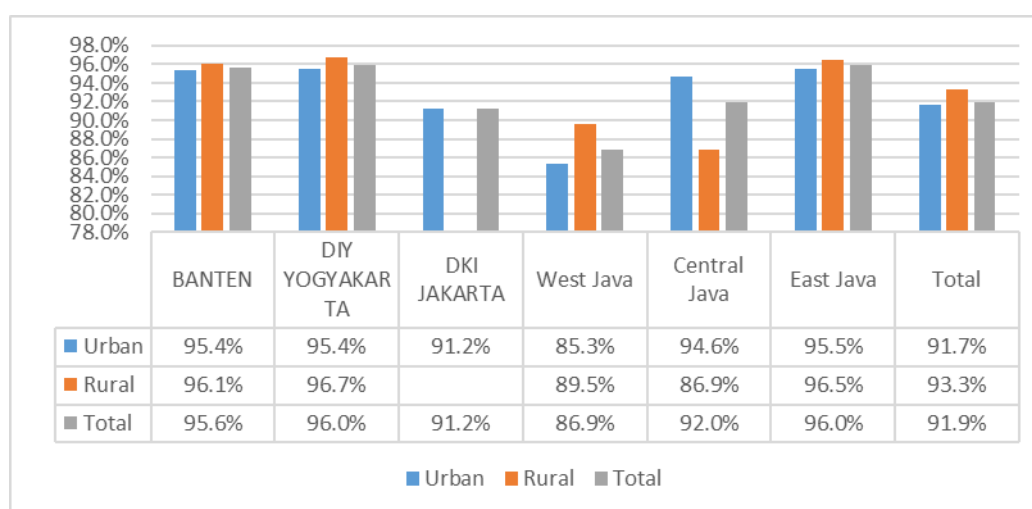|	BANTEN	DIY YOGYAKARTA	DKI JAKARTA	West Java	Central Java	East Java	Total
■ Urban	95.4%	95.4%	91.2%	85.3%	94.6%	95.5%	91.7%
■ Rural	96.1%	96.7%		89.5%	86.9%	96.5%	93.3%
■ Total	95.6%	96.0%	91.2%	86.9%	92.0%	96.0%	91.9%

Figure 4.15. MR Immunization Coverage by Urban-Rural

MR immunization coverage in 6 provinces at Java island in urban area was slightly lower than rural area in all provinces , excep at Central Java where MR immunization coverage at rural area was higher than at urban area. The MR immunization coverage at urban area range from 85.3-95.5% where the lowest was found at West Java and the highest was at East Java. Meanwhile MR immunization coverage at rural area range from 89.3-96.3% where the lowest found at West Java and the highest was East Java. Hence, this MR coverage evaluation reflected that performance at rural area was slightly better than in urban area, except at Central Java shows in other way around the urban villages was highest than the rural villages.

Valid MR immunization coverage is if the MR immunization given during MR campaign on September to November 2017.
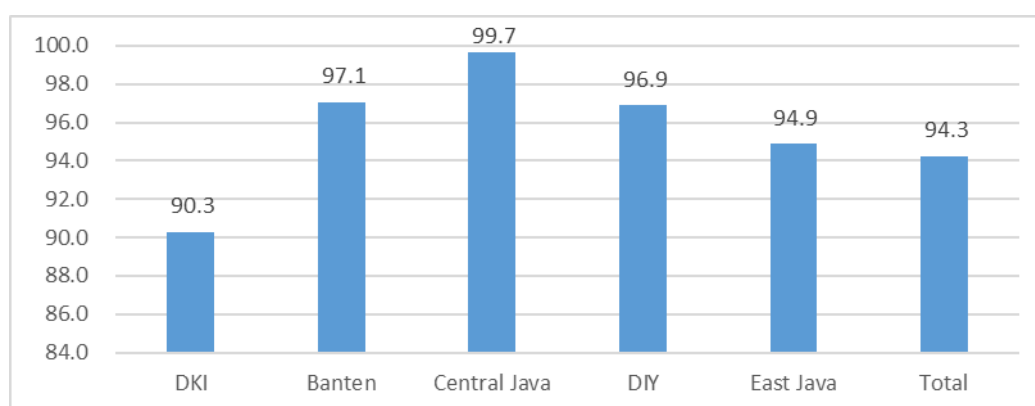

Figure 4.16. Valid MR Immunization Coverage

Among those whose MR immunized both by recall and by cards majority given during MR campaign in all provinces at Java island. The majority of the children were also aged from 9 months of age to 14 years old. The valid coverage here was measured among children who had been recorded in KIA book, immunization cards and MR register. The valid coverage define if the children immunized both by recall and it was recorded in any form. However the number of children had been recorded and the survey found the record was range 5-10% in all provinces. The slightly different between crude and valid MR coverage that reflected that all MR immunization given in the right time and to the real target children.

The place of MR immunization was being measured during MR immunizaion coverage in all provinces at Java island. Usually the immunization for all vaccines are given at Posyandu,

Health centers for basic immunization and second dose of measles and DPT, while immunizatin are givene at school for school immunization.
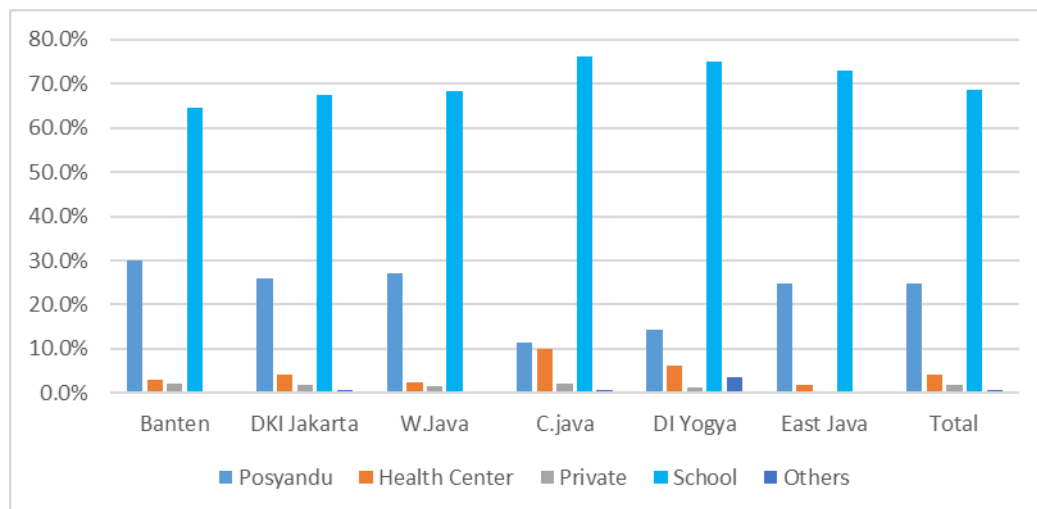
Figure 4.16. Place of MR Immunization

The MR immunization coverage evaluation shows that majority (more than 60%) of children were immunized at school compared to Posyandu and health center, and non government health facilities in all provinces at Java island. However this proportion also affected by the sample of this evaluation, since the sample of the coverage survey used Probability Proportionate to Size (PPS) and proportion of children 5-14 years old was higher than children 9-59 months of age in real population, therefore proportion of children were immunized at school would be higher compared to at Posyandu, health centers and other health facilities.

Figure 4.16. Place of Measles 1 Immunization

Compared to the place of immunization of the first dose measles among children 9-59 months of age, the place of immunization for MR and the first dose measles was different. However the Posyandu and health center were highest proportion as place of immunization both for MR immunization and fir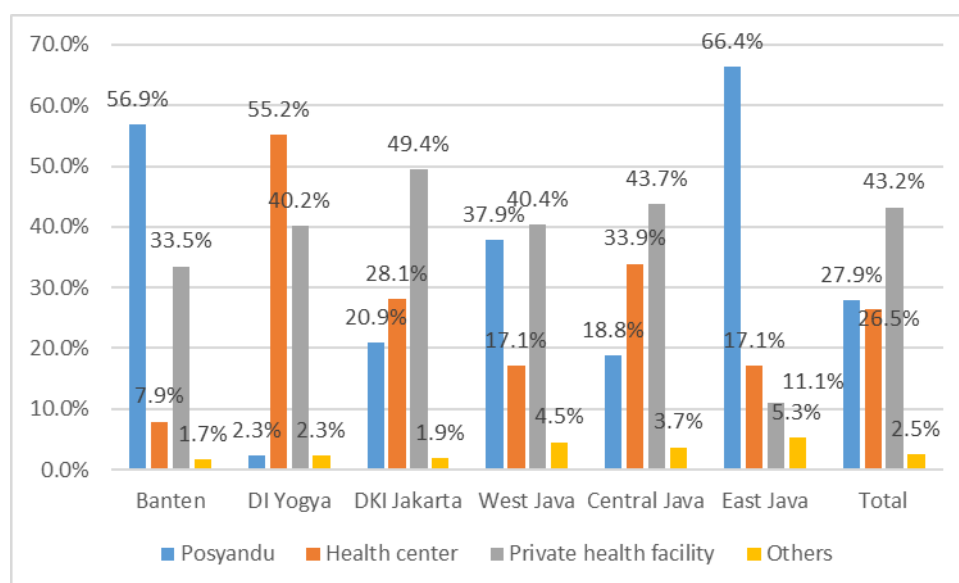st dose measles are similar among children 9-59 months of age, if immunization at school for MR campaign was not considered because the place of immunization for children 5-14 years old.

Reason for not immunized for MR immunization reflected reasons among children who did not immunized during MR campaign. The reasons for all children in all provinces at java island can be seen below:

Table. 4.3. Reasons For Not Immunized for Basic Immunization

Reasons for Not Immunized	DKI	West Java	Central Java	East Java	DIY	Banten	All Prov
a. Did not Know on MR Immunization	11,8	16,1	9,9	4,3	17,5	6,4	11,8
b. Did not know on Benefit of Immunization	1,0	2,2	0,8	1,4	3,2	1,4	1,6
c. Did not know Schedule and place of Immunization	10,2	11,6	5,0	5,8	14,3	7,1	9,4
d. Afraid of Immunization Side Effect	4,6	4,9	2,5	2,9	4,8	10,6	5,2
e. Wrong Perception of Immunization Contra Indication	1,6	1,1	0,0	1,4	1,6	2,8	1,4
f. Cancelled on Immunization Schedule	4,6	3,7	4,1	4,3	1,6	5,7	4,2
g. Did not believe to Immunization Benefit	2,3	4,5	1,7	11,6	1,6	2,1	3,4
h. Issues on Immunization	4,6	8,6	2,5	14,5	3,2	5,0	6,1
i. Distance to Place of Immunization	0,0	1,5	0,8	1,4	0,0	1,4	0,8
j. Immmunization Schedule	5,9	1,9	1,7	1,4	1,6	2,8	3,2
k. Provider of Immunization was not Available	0,0	0,4	0,0	0,0	0,0	0,0	0,1
l. Vacsinwas not Available	0,3	0,7	0,0	0,0	0,0	0,7	0,4
m. Mothers Busy	3,6	4,1	4,1	0,0	0,0	7,8	3,9
n. Family matters	1,0	0,7	0,0	0,0	0,0	2,1	0,8
o. Children get sick	26,6	29,2	25,6	15,9	20,6	31,2	26,7
p. Long waiting time	0,0	0,4	0,0	0,0	0,0	0,0	0,1
q. Cost of Immunization	0,0	0,4	0,0	0,0	1,6	0,7	0,3
r. Afraid with side Effect	3,3	2,6	4,1	4,3	1,6	5,7	3,5
s. Afraid with pain during immunization	0,7	0,4	3,3	1,4	0,0	2,1	1,1
t. Fake Vaccines	1,3	0,4	0,0	0,0	0,0	0,7	0,6

Reasons for Not Immunized	DKI	West Java	Central Java	East Java	DIY	Banten	All Prov
u. Provider not avvailable	0,7	1,9	0,8	7,2	0,0	7,1	2,4
v. Provider was not professional	0,3	0,4	0,0	0,0	0,0	0,0	0,2
w. No Immunization schedule	0,7	1,1	2,5	1,4	1,6	0,0	1,0
x. Children did not available during MR Campaign	2,0	1,5	4,1	2,9	0,0	3,5	2,3
y. Others	23,6	26,6	28,1	21,7	11,1	22,7	23,9

Table above shows that the highest reasons for not immunized during MR campaign was: children get sick (26.7%) followed by mothers did not know benefit of MR immunization (11.8%) and did not know schedule and place of MR immunization (9.4%). All this the highest reasons reflected that effort of implementation of MR immunization was optimaly done MR campaign in 2017 in all provinces in Java island.

4.7.   Other Related Information to MR Immunization Coverage

In order to complete information of MR campaign implementation, then all information can be used for evaluation of MR Campaign in Indonesia, so some information related to MR campaign implementation are required. The results of some information to MR immunization can be seen below:
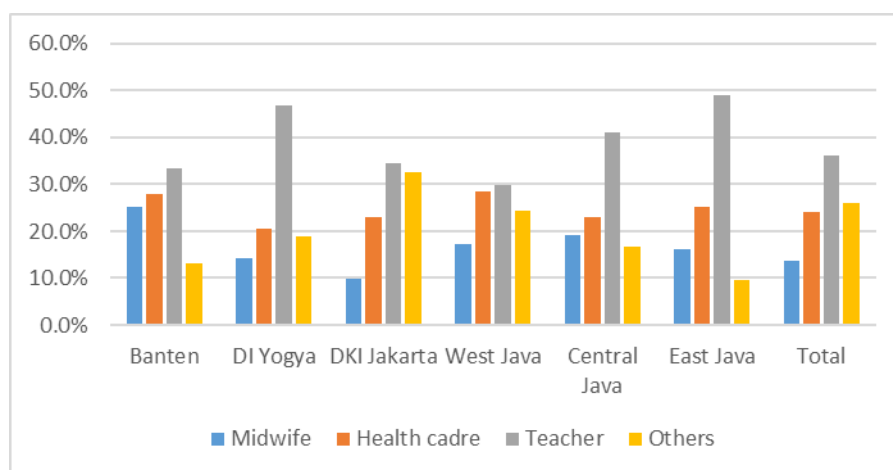
Figure 4.17. Source of Information of MR Immunization Coverage

During the MR coverage survey, among mothers who knew on MR immunization, then source of information of MR immunization had been asked to the mothers. The MR immunization coverage evaluation found that more than 30% mothers knew from teachers of their children, followed by from health cadres and health providers. This finding shows that due to proportion of children 5-14 years old higher than children 9-59 months of age, then the

highest proportion of source of information was teachers. The proportion of source of information (teachers, health cadres and health providers) in all provinces shows optimal effort of implementation of MR in all provinces at Java island.

Measles second dose and school immunization was measured during MR immunization coveage evaluation in all provinces at Java island. The results of those immunization coverage can be seen below.
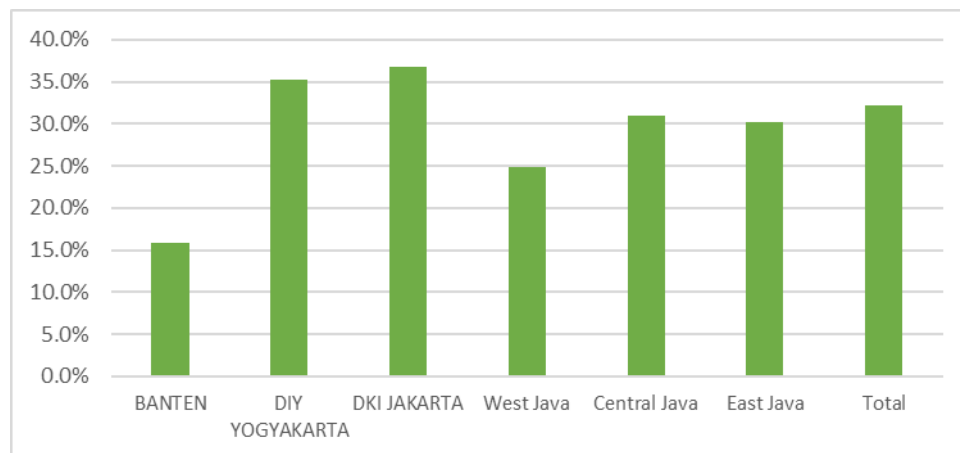
Figure 4.18. Second Dose Measles Immunization Coverage

Measles second dose coverage in all provinces at Java island range from 15-35% where the lowest found at Banten and the highest was at DI Yogyakarta and DKI Jakarta. This second dose coverage was measured among children 9 months of age to 14 years old, therefore the coverage will be under estimated because the second dose immunization had been started since 2014 (4 years ago). Hence, the population of the survey was not proper to measure this coverage, therfore the second dose coverage among those population would be under estimated.

Figure 4.19. School Measles Immunization Coverage
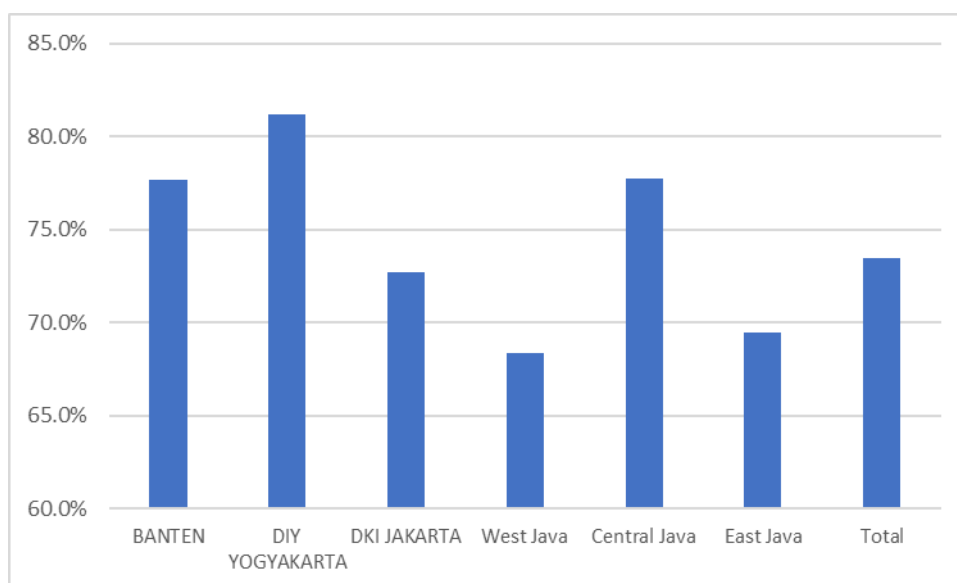
The coverage of measles school immunization in this survey range from 68-81% where the lowest found at West Java province and the highest was at DI Yogyakarta. However, this measles was measured among children 9 months of age to 14 years old, while if measuring the measles school immunization should be among children more than 7 or 8 years old as eligible children. Therfore the measles school immunization in this survey was also under estimated as well as the measles second dose.
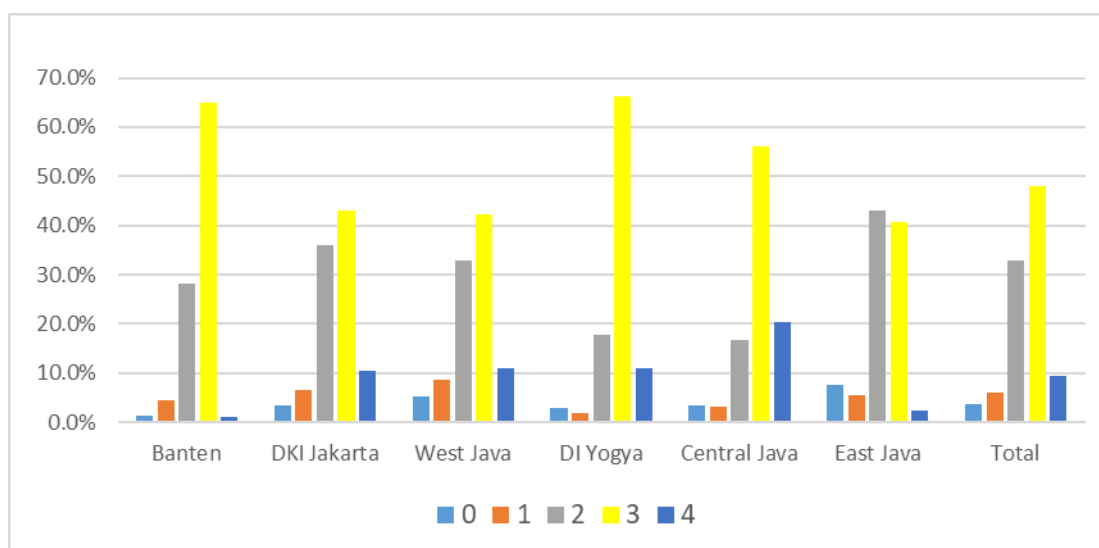

Figure 4.20. Frequency of Measles Immunization

Frequency of measles immunization was also measured in this evaluation. Figure 4.20 above shows that proportion of children with 3 times of measles immunization was the highest proportion compared to 4 times, 2 times, 1 time and not at all (0 time). The proportion of the

frequency measles immunization in this survey reflected the results of implementation basic immunization, second dose and MR immunization was optimal in all provinces at Java island. By implemented all those immunization schedule properly then the expecation of proportion of children with 2-3 times of measles immunization are expected to be more than 95%. The figure above shows none of provinces reached the proporrtion of 2-3 times of measles immunization reached more than 95%.

4.8.   Family Background

Family background such as age of father and mother, education attaintment of mother and father, occupation of mother and father, size of family are all variables might contribute to MR immunization status of the children. Therefore in this MR immunization coverage evaluation in all provinces at Java island were gathered in order to describe all the factors associated to MR immunization status of children. The results of family backgrounds of the children are follow:
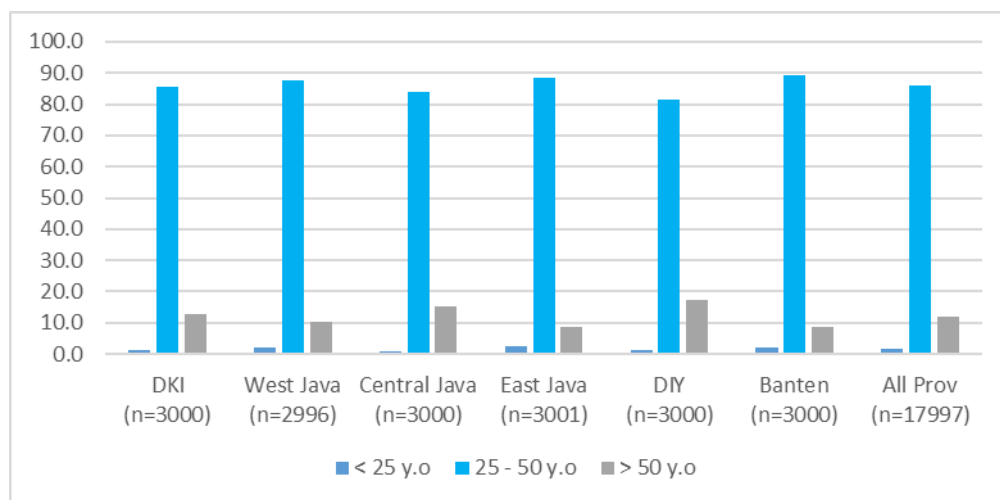

Figure 4.21. Agegroup of Father of Children

Father agegroup of children in all provinces have the similar pattern that the proportion of father with agegroup 25-50 y.o was the highest one compared to agegroup >50 y.o and <25 y.o. This results shows that majorirty (>80%) of father agegroup was productive and also considered in reproductive age.

Figure 4.22. Father Education Attaintment of Children

Majority of father of the children in all provinces had senior high school for their education attaintment. The proportion of father of children with senior high school in their education attaintment range 40-59%. While father of children with junor high school range 15-21%, elementary school 10-20% and academic/university was 11-15%. This study also shows that DKI Jakarta had the highest proportion of father with senior high school compared to other provinces.

Figure 4.23. Mother Agegroup of Children

Similarity with children agegroup, mother agegroup of children in all provinces have the similar pattern that the proportion of mother with agegroup 25-50 y.o was the highest one compared to agegroup >50 y.o and <25 y.o. This results shows that majorirty (>80%) of mother agegroup was productive and also considered in reproductive age.
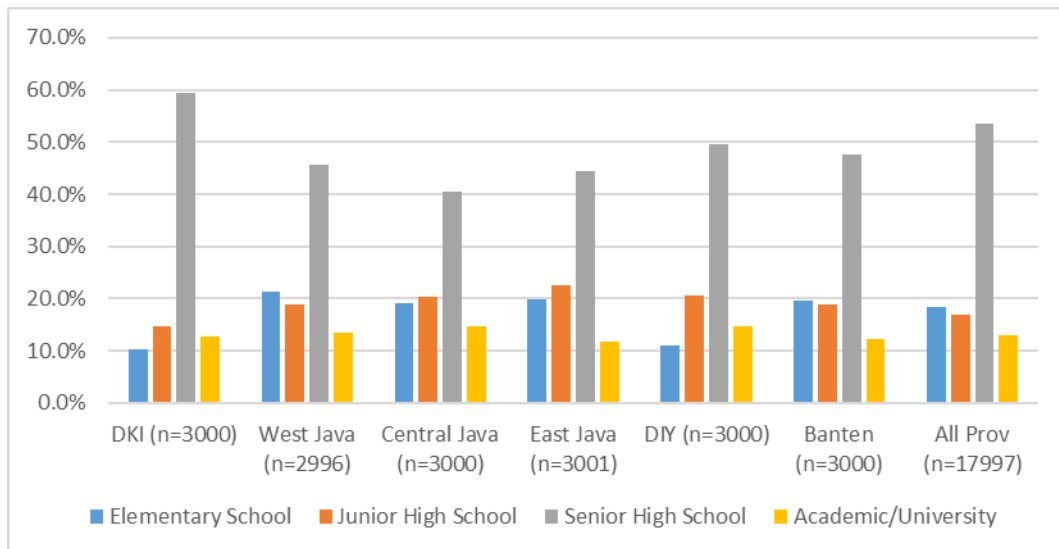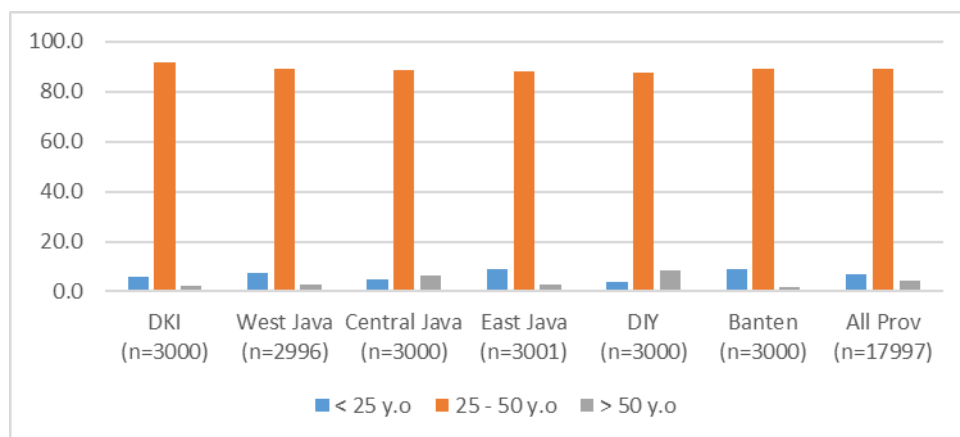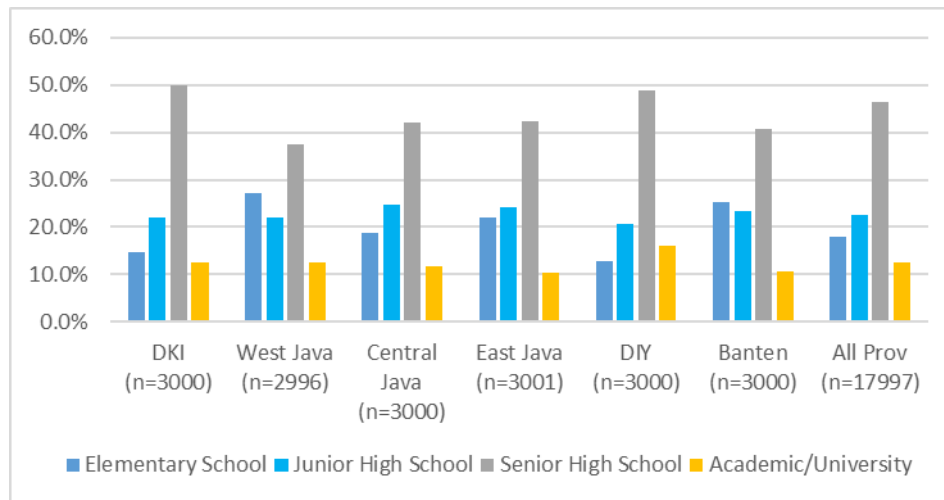
Figure 4.24. Mother of Children Education Attaintment

Majority of mother of the children in all provinces had senior high school for their education attaintment. The proportion of mother of children with senior high school in their education attaintment range 39-50%. While mother of children with junor high school range 20-23%, elementary school 13-25% and academic/university was 10-15%. This study also shows that DKI Jakarta and DIY had morelikely the highest proportion of mother with senior high school compared to other provinces. Proporrtion of mother with senior high school was lower compared to the father.

Figure 4.25 Number of CUF in HH

The proportion of family with zero number of children (children sample excluded) in all provinces considered as the highest follow by 1 child and more than 1 child. The proportion of family with none of CUF range 53-61%, while family with 1 child range 32-41%). The highest proportion of family with none CUF was found at Central Java and the lowest was

East Java province. The highest proportion of family with 1 child was found at DKI Jakarta, DIY and Bantern while the lowwest was at West Java province.
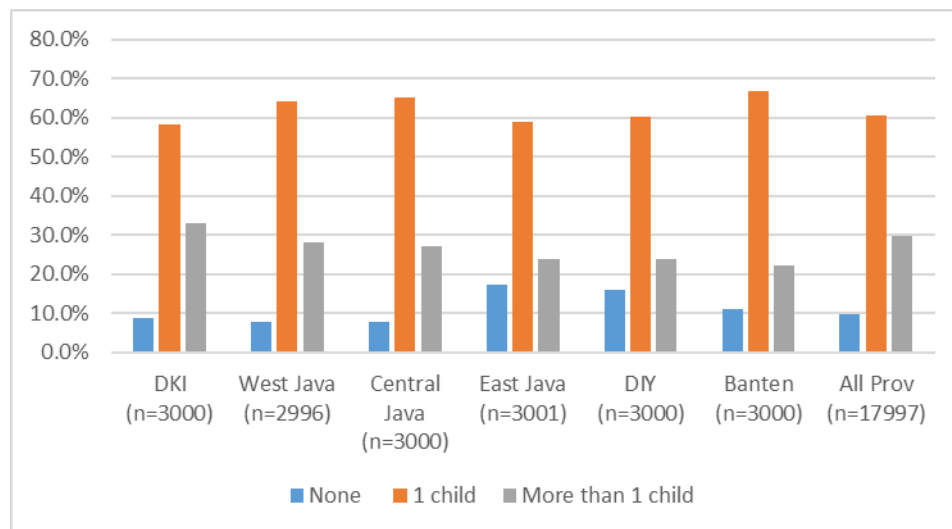
Figure 4.26. Number of Children in the HH

The proportion of family with 1 number of children (children sample excluded) in all provinces considered as the highest follow by more than 1 c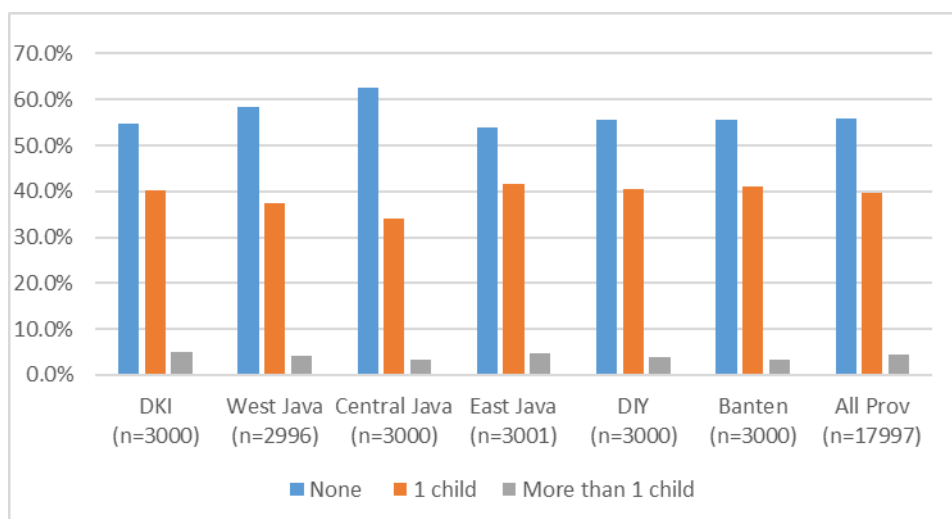hild and none. The proportion of family with 1 child range 56-67%, while family with more than 1 child range 21-32%. The highest proportion of family with 1 child was found at Central Java and the lowest was East Java province. The highest proportion of family with 1 child was found at DKI Jakarta, DIY and Bantern while the lowwest was at West Java province.

4.8. KAP of Mothers

Knowlegde, attitude and practice of mother on immunization was also considered as other variables contributed to MR immunization status of the children. The description of mother's KAP as follow:

Table 4.6. Knowledge of Mothers on Type of Vaccines

Know Type of Vaccines	DKI Jakarta	West Java	Central Java	East Java	DI Yogyakarta	Banten	All prov
A. TBC	10,4	19,6	14,8	18,0	15,5	22,2	16,8
B. Diptheriae	17,5	21,6	13,9	36,6	11,8	31,1	22,1
C. Tetanus	7,0	8,6	10,9	13,8	11,6	14,0	11,0
D. Pertusis	6,7	6,1	7,6	8,8	9,0	10,6	8,1
E. Poliomyelitis	43,7	47,1	56,7	49,4	59,5	52,0	51,4

F. Measles	49,3	54,7	60,9	53,2	62,1	62,4	57,1
G. Hepatitis B	15,0	17,5	20,6	14,6	20,1	14,7	17,1
H. Influenzae	6,9	5,1	5,7	7,0	7,4	5,3	6,2
I. Pneumococcus	0,8	0,6	1,0	2,5	2,0	0,8	1,3
J. Tiphoid	1,2	2,1	1,8	3,3	2,2	2,4	2,2
K. Varicella	13,1	12,0	15,9	9,6	13,0	15,2	13,1
L. Mumps	2,1	4,4	1,7	4,6	3,0	3,8	3,3
M. Rubella	16,4	28,9	26,2	37,2	39,1	41,1	31,5
N. Rotavirus	2,7	0,6	0,8	2,7	1,8	0,4	1,5
O. Japanese Encephalitis	0,3	0,3	0,3	1,7	1,5	0,2	0,7
P. Human Papilomma Virus	1,0	0,5	0,3	1,8	1,8	0,4	1,0
Q. Dengue Virus	1,5	1,1	0,7	3,0	1,2	1,5	1,5
Y. Others	24,4	13,7	5,5	8,7	5,9	6,2	10,7

Table above shows the knowledge of mothers on type of vaccine in preventing the diseases. The highest proportion of mothers who know typr of vaccine in preventing Measles, follow by Poliomyelitis, Diptherriae and TBC. Eventhough theproportion of mother who know the type of vaccine in preventing the diseaes, the proportion reflected that the famous vaccine or diseaese among mothers was: measles, Poliomyelitis, Diptherriae and TBC
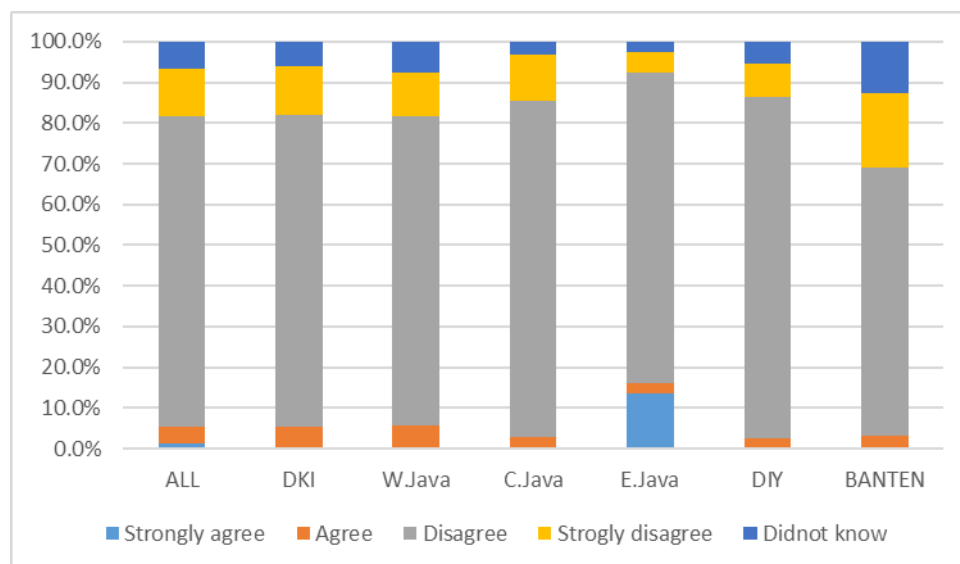

Figure 4.27. Perception of Mother in Halal/Haram of Vaccine

The proportion of mother who did not agree and strongly disagree when they were asked vaccines were haram, is more tha 90% in all provinces. In the other way around that the proportion of mother who agree and strongly agree is less than 10%. This highest proportion

of mother who agree and strongly agree with vaccine is haram found at East java (11%) and the lowest was at Central Java, DIY and Banten. (1-2%).
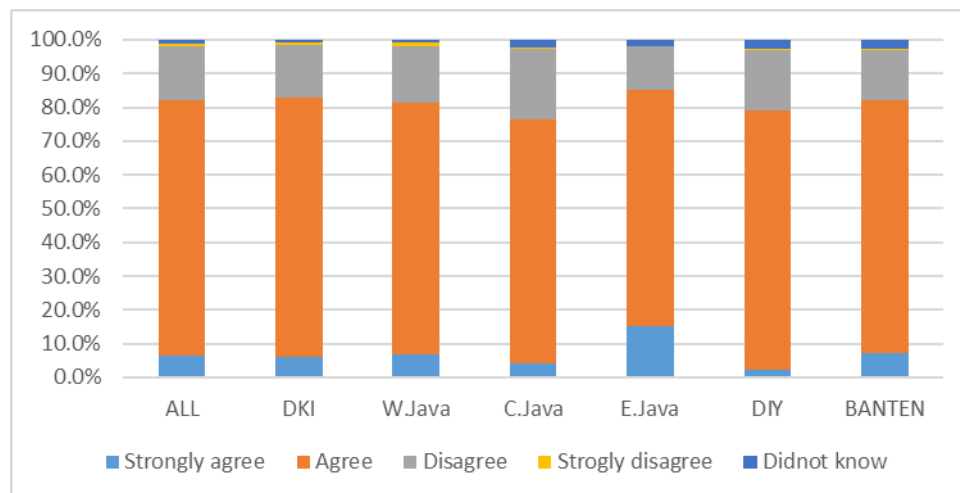
Figure 4.28. Perception of Mother in Immunization can Cause Fever

The Proportion of mothers who had perception (agree and strongly agree) that immunization might have fever side effect was ranging from 78-82% in all provinces at Java island. This proportion should be considered to be warning for immunization services to be more careful and follow the SOP of immunization services to reduce side effect of immunization.
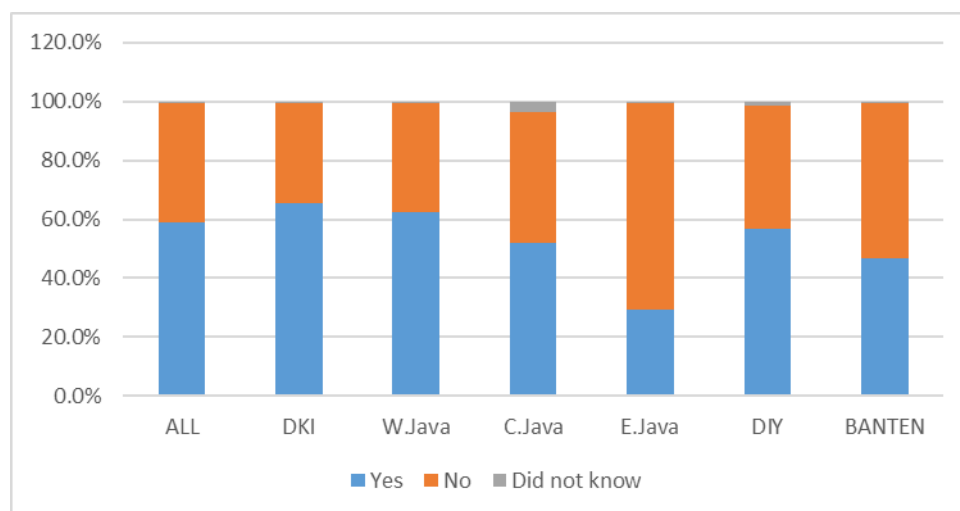
Figure 4.29. Had experienced Used Private Health Facilities for Immunization

The proportion mothers who had experience to immunized their children in private health facility range from 30-61%. The highest proportion was found at DKI, West Java and DI Yogyakarta, while the lowest was East Java. This proportion shows the need of mothers in immunization.
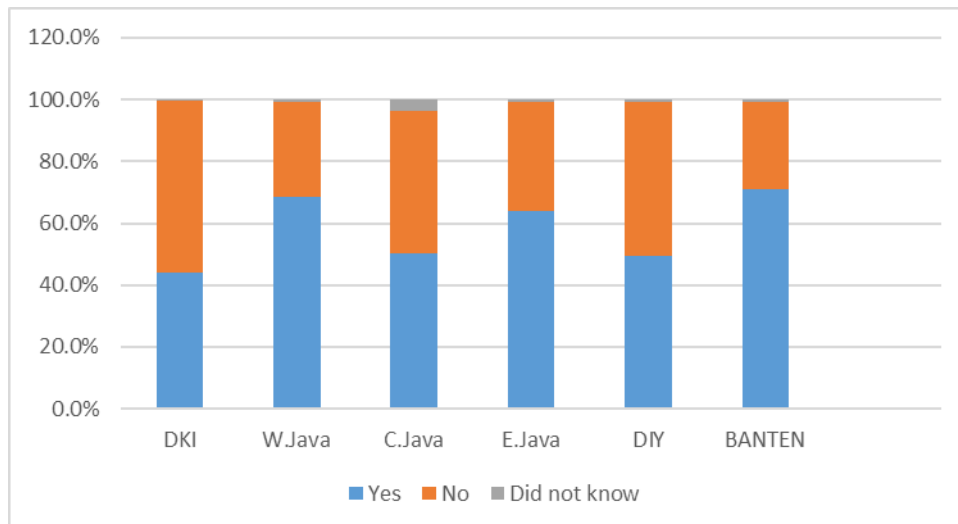
Figure 4.30. Mothers had Experienced on Immunization Side Effect

The proportion of mothers who had experiences their children got side effect after immunization range 40-70% where the highest was found at Banten and the lowest was at DKI Jakarta and the highest was Banten. This mothers experiences in line with the perception of mothers that had immunization might have fever side effect. Hence all provinces with high proportion of mothers with experiences their children got side effect then the provinces should increase their quality of immunization services in order to reduce the occurence of side effect. High proportion of side effect will affect the community participation on immunization and later will affect immunization coverage.
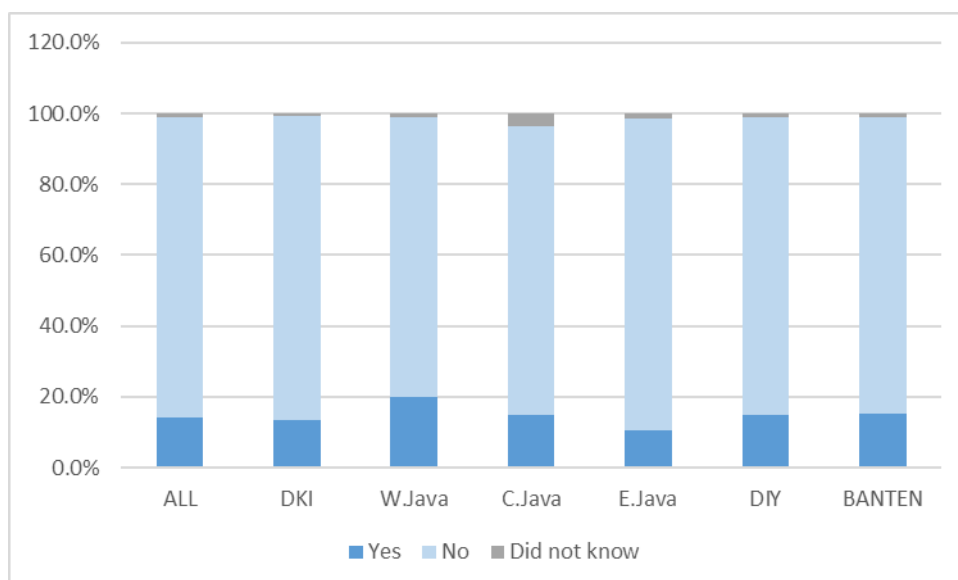
Figure 4.31. Missed Opportunity on Immunization

Miss opportunity was defined if the children had already came to immunization services but they had not been immunized. The proportion of missed opportunity range from 10-20%,

where the highest was found at West Java and the lowest was at East Java. The provinces with high proportion of missed opportunity should considere to improve their immunization services in order to increase their immunization coverage.
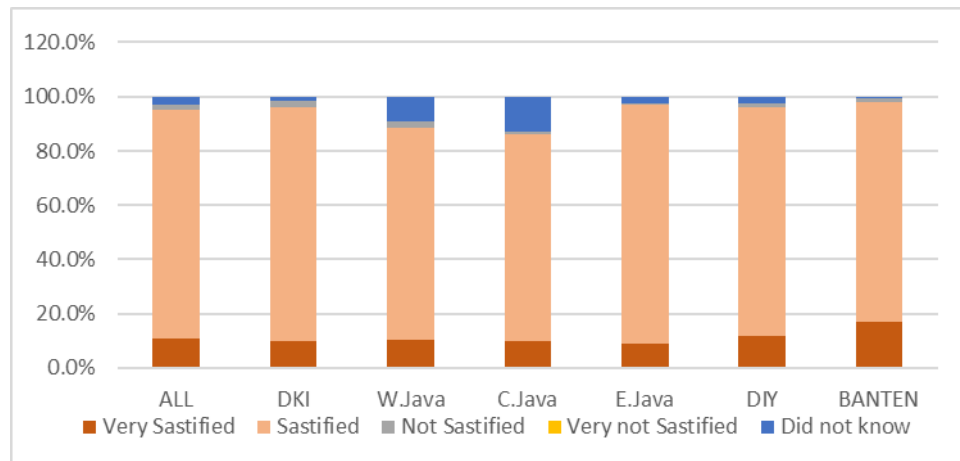
Figure 4.32. Quality of Immunization Services

The proportion of mothers who were very satisfied and sastified with immunization services range from 83-98%, where the lowest was found at Central Java and the highest was DKI Jakarta, East Java and Banten. This proportion shows that all mothers in all provinces were sastified with immunization services (posyandu, health centers, school immunization), however a good quality of immunization services was given to the children.

4.9.   Socio-Economic Factors

Socio-economic of the family was also considered to be factors associated to the MR immunization status of the children. The description of socio-economic of the family of the children as follow:
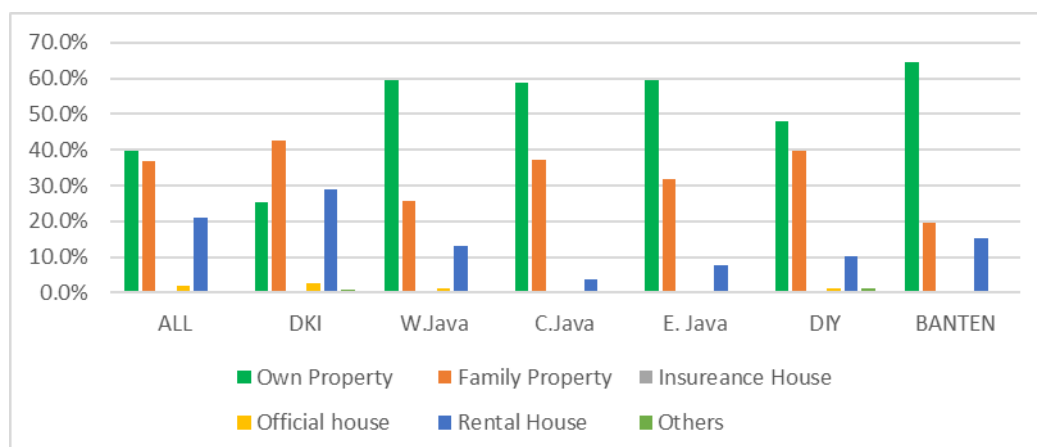
Figure 4.33. Property Status of House

The proportion of family lived at their own house range 21-60%, where the highest was found at Banten, West Java, East Java and Central Java. This proportion shows level of socio-economic at West Java, Central Java, East Java and Banten were better than DKI Jakarta and DI Yogyakarta. However the property of house is not only one variable to reflect the socio economic status of the family.
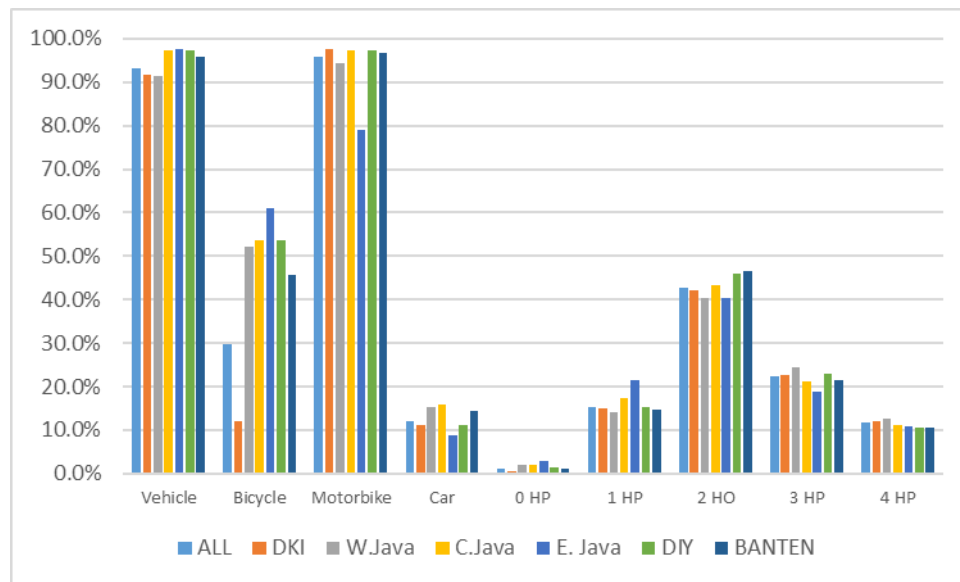
Figure 4.34. Property of Vehicle and Mobile Phone

Proportion of family who have vehicle was more than 80% in all provinces at Java island. Among those who have vehicle more than 79% have motorcycle and only less than 18% had car. Meanwhile around 40% of family have two mobile phone. This property of vehicles shows the socio-economic level of family in all provinces included the property of mobile phone. In other view of point property of mobile phone could be used to other opportunity such as considering to have health promotion through the media in mobile phone. For bicycle property did not been discussed becasue it was not reflected socio-economic of the family.

4.10. Factor Associated to MR Immunization

In order to know some factors associated to the MR immunization status of the children in the coverage survey, bivariat and multivariate (using multiple logistic regression) analysis had been applied. All variable in bivariate analysis with p value less than 0,25 will be included in multivariate analysis. The results of multivariate anlysis can be seen in Table below:

Table 4.8. Result of Multivariate Analysis of Factors Associated to MR Immunization Status

Variables	B	S.E.	Wald	df	Sig.	OR	95% C.I.for EXP(B)	
							Lower	Upper
Agegroup (<5yo)	1,020	,061	280,364	1	,000	2,773	2,461	3,124
Urban/Rural	,222	,065	11,789	1	,001	1,249	1,100	1,418
Sex	,184	,060	9,237	1	,002	1,201	1,067	1,352
Education of Mothers	-,078	,034	5,255	1	,022	,925	,866	,989
Know on Measles	,245	,063	14,931	1	,000	1,278	1,128	1,447
Know on Rubella	,647	,080	65,612	1	,000	1,910	1,633	2,234
Sorce of Info on H Prov.	,342	,071	23,281	1	,000	1,407	1,225	1,616
source of info H.Cadre	,358	,063	32,296	1	,000	1,431	1,265	1,619
Source of info informal leaders	-,226	,102	4,903	1	,027	,797	,653	,974
TV	,199	,065	9,390	1	,002	1,221	1,075	1,387
Mother Confortable	-,281	,026	117,235	1	,000	,755	,717	,794
Afraid to Side Efect	-,275	,120	5,220	1	,022	,759	,600	,962
Constant	,376	,255	2,184	1	,139	1,457		

From Table above the variable statistically significant to the MR immunization status of he children was: agegroup, urban/rural, sex, education of mothers, mothers know measles, rubella, source of information from health provider, source of informaton from health cadres, source of information from informal leader, information from TV and afraid with side effect. All those variable should be considered in order to increase MR status of the children in all provinces at Java island. By considering all those factors will increase community participation in all provinces, then it will increase MR immunization coverage in all provinces at Java island.

4.11. Qualitative Findings

In order to have comprehensive information this MR immunization coverage in all provinces at Java island have two approach quantitative approach by conducting coverage survey and qualitative approach using Rapid Assessment Procedure (RAP). In the qualitative approach,

indepth interveiew, observation of cold chain and secondary data had been done in data collection of this qualitative approach. The results of qualitative as follow:

Table.4.7. Summary of qualitative Results at Provinces Level

Variables		DKI	West Java	Banten	Central Java	DIY	East Java
Policies	- Follow National Guideline on EPI	+++	+++	+++	+++	+++	+++
	- Operational cost (transportation, facilities, services deliveries, etc)	++	++	++	++	++	++
	depended on district and province local policies	++	++	++	++	++	++
	- Services delivery can be at Posyandu, HC and Hospitals	+	+	+	+	+	+
	- Each district had specific obstacles	-	+	+	+	-	+
Human Resources and facilitis	- Human resources was limited for every programs	++? ++	++? ++	++? ++	++? ++	++? ++	++? ++
	- Facilities was depended on Budget available at province and districts						
Cold Chains	- Province has good coldchain facilities and good maintanance	+++	++	++	++	+++	++
	- Number of vaccine carriers was limited	+++	++	+	++	++	++
Reporting	- PWS was not all district used	++	++	++	++	++	++
	- Sometime not reported	++	++	++	++	++	++
Obstacles	- Budget available	++	++	++	++	++	++
	- Issue on Haram of vaccination	+	+	+	+	+	+
	- ORI implementation	++	++	++	++	++	++
	- Rejection from the School	+	+	+	+	+	+
	- MR Vaccine with B class.	++	++	++	++	++	++

a. *Policy*

Policy in province level and district level are followed by all policies and guideline from national level or National EPI. All provinces in implementing MR campaign followed all national guideline, however some provinces did some modification of the implementation due to the province and districts condiction such as human resources, trasportation facilities and geographic areas.

Immunization services at all provinces had been delivered at posyandu, health center and school and others private health facilities, except in DI Yogyakarta, where did not deliver immunization services at posyandu. However all immunization services could be delivered in all provinces optimally in order to reach number of target children.

b.   *Human Resources and Facilities*

All health centers and districts have limited human resources and facilities for immunization program. Optimalization of human resources and facilities in health centers and districts had done in order to achieve all target and to implementaton followed the national guideline. For example during MR campaign there was also ORI (outbreak response on Immunization), then the districts should prioritize one of the two immunization program activities. If they should conducted both, then it will not be optimal.

c.   *Cold Chain*

Cold chain in province level, all provinces had good cold room and all temperature were monitored very well and it had adequate space to store all vaccines in the province. In district level some districts had non adequate number of RCW freezer to store all vaccines in the district, where the temperature was also not rutinely monitored. In health center level, each health center had at least one freezzed (RCW) in all provinces. The problem was only in vaccine carrier to bring the vaccines from district to health centers all from health center to posyandu or village midwife (pos obat desa). Some district and health center at all provinces did not have adequate vaccine carrier.

d.   *Reporting*

Recording and reporting of MR immunization was not accomodated yet in KIA book and other immunization card and there is no uniformity of recording and reporting form in all health centers and districts. For example in recording and reporting form in health center and district, the name and address were not written completely, or some was not written in the form of MR immunization recording system.

e.   *Obstacles*

Obstacles in district level, majority of districts said that the budget for MR campaign implementation was not properly in amount. This problem became a bigger problem if the district should implement ORI that covered all district areas. However, the districts still

implemented MR campaign optimally since the districts had good commitment on MR campaign. Other problems were some school and small area rejected to immunization program activities due to religion reasons, included rejection from some school in the district. This problem increased in December 2017 when halal and haram issues become naational issues in the country. Fortunately the issues raised at the end of MR campaign implementation in all province at Java island.

Table.4.7. Summary of qualitative Results at School at Provinces Level

Variables	School Teacher and Cadre	DKI	Banten	West Java	Central Java	DIY	East Java
Knowledge	- Knowledge on VPD - Knowledge on Immunization - Knowledge on reporting	+ + +	+ + +	+ + +	+ + +	+ + +	+ + +
Human Resources and Facilities	- Number - Facilities	+ +	+ +	+ +	+ +	+ +	+ +
Activities	- Once/months - Supporting	++ ++	++ ++	++ ++	++ ++	++ ++	++ ++
Expectation	- Involvement - Educate people - Educate teacher and parent	++ ++ ++	++ ++ ++	++ ++ ++	++ ++ ++	++ ++ ++	++ ++ ++
Obstacles	- Low Knowledge - Budget Support - Motivation	++ + ++	++ + ++	++ + ++	++ + ++	++ + ++	++ + ++

In school immunization found that the knowledge on immunization and VPD of the teachers in the school very low in all provinces at Java island. The teacher also did not know on recording and reporting on immunization included on MR immunization, even they do not involve in recording and reporting. The teachers felt that they should know on immunization and VPD so that if there would be parent complained to them on the effect of immunization of their children, then the teachers could explain them very well. However it would not be happened until now due to lack of knowledge of teacher on immunization and VPD.

However, all school immunization activities in the school, all teachers always supported with any kind of supported such as: provide a time for immunization, the room for immunization

service, and other ones. Eventhough they did not know or understand on immunization and VPD but they belileved that immunization will have good effect for their students health.

CHAPTER 5. DISCUSSION

5.1. Study Approach and Design

The assessment of MR Immunization Coverage at 6 provinces used both quantitative and qualitative approach where each approach have a specific advantages and disadvantages. A quantitative approach of the assessment used cross sectional survey namely coverage survey. As the the cross sectional survey, the assessment have some disadvantages such as: i) The children immunization status in the survey may describe the immunization status of the children at point or periode of time, hence the results of other coverage survey will have different results if the survey conducted in different point/periode of time. ii) the potrait of characteristics of respondents/children and other variables may describe the condition all those at this point/periode of time. iii)ambiguity of relationship between immunization status of children and related factors which assessed in the survey. However cross survey have some advantages such as:i) it will represent the picture of the population under study. ii)the survey will relatively less expensive compare to othe study design (cohort). iii) the survey need less time consumption compare to other design (5),(6).

Meanwhile, a qualitative approach have also some advantages and disadvatages as qualitative study. The advantages of qualitative study are: i)it will explore all related issues in immunization status of the children and other related factros. ii)it will complement all information gathered from the survey iii) all information gathered from this approach both from quantitative and qualitative will make all information become comprehensive. However the qualitative study have disadvatanges while the information bias might occured, especially if the relationship between the interviewer and informant (raport) was not closed (6b).

5.2. Sample Size, Sampling Frame and Maps

The sample size had been calculated based on the formula in the WHO manual of Immunization Coverage Survey. However all the sample calculation used some assumption where as: immunization coverage more than 95%, confidence interval was not wider than 10%, ESS does not change for coverage levels between 30% and 70%. When the coverage level is assumed to lie outside the interval [30%, 70%] with 2 strata (urban and rural).(3) As

the results the minmal sample size was 2,764 sample (rounded become 3,000 sample). If one of the assumption was not same with the real one in the field, then the sample size might be smaller. The smaller sample size will affect the random bias and produce a larger uncertainty (larger confidence interval) (7a).

The survey used two stage sampling method, where the primary sampling unit was village as cluster and secondaary sampling unit was family with eligible children. The survey was also used PPS (Proportionate Probability to Size) in selecting primary sampling unit (cluster). The best sampling frame in selecting secondary sampling unit was the list of family with eligible children in the cluster. (7). If the sampling frame list of family of eligible children then by applying simple random sampling to select the secondary sampling unit will give same probability for the sample in the cluster. However if the the list was not available in the cluster other sampling method (mapping and random spot area in the map) may be used, but the probability of the sample in the cluster will not be same for each family (sample), therefore the probability should be calculated in order to estimated the value in the cluster.

However the avaibility of the list of eligible in the cluster was vary in each provinces from 20-80%. Therefore the probability of sample in the cluster without the list of family with eligible children will affect the probility of those sample and it was vary province to province.

5.3. Training

Information bias may be occured during data collection in the survey or the assessment. In order to minimize the bias all enumerators of the survey and interviewer for qualitative study were trained. Two days training had been done before data collection were implemented in this assessment. Number of enumerators and interviewer was also considered to ensure quality data of the survey or the assessment.

5.4. Basic Immunization Coverage

Basic immunization coverage was assessed among children under five as part of the survey and mentioned in the objectives of the assessment. In all provinces the total sample of children 9 months of age to 14 y.o. was 17.897 children. Among those the basic immunization coverage were: BCG (>93%), DTP1 (92%), DTP2 (>87%), DTP3 (>82%),

Polio1 (>93%), Polio 3(>87%), Polio4 (>76%) and Measles (>80%). The basic immunization coverage showed that all the coverages were achieved more than > 80% and first dose measles was >80%. The first dose measles coverage should be followed the high coverage of second dose measles and MR coverage should achieve more than 95%.

If all the basic immunization coverage seemed to be underestimated compared to the administrative/reported coverage. The different of the coverage could be due to some reasons such as: i) target population for reported coverage was underestimated. ii) reporting bias, and iii)information bias of the survey. Target population for reported coverage is commonly problematic every year in several provinces in Indonesia, included in all provinces at Java island.

5.5. Measles and MR Immunization Coverage

Measles coverage was assessed among children under fifteen years old in the survey for first dose, second dose, school dose and also MR. The survey found that the immunization coverage for first dose (>93%), second dose (>15%), school dose (>68%), MR(>88%). The second dose coverage was achieved more than 15% and MR was >88%. However, MR coverage was ranging from 88-96% in all provinces at Java island. This MR immunization coverage can't be compared to the the survey result in Haiti (2009), Kirzygtan (2015) and Cambodia (2017) (8), (9), (10).

If MR coverage seemed to be underestimated compared to the administrative/repoprted coverage. The different of the coverage could be due to some reasons such as: i) target population for reported coverage was underestimated. ii) reporting bias and. iii)information bias of the survey. Target population for reported coverage is commonly problematic especially if the traget population was determined by real counted from all health cadres in the province.

Another bias of MR coverage was for school MR immunization coverage the number of students in the schools were not counted by their address. All students in the school would be included as numerator of number of children immunized in the area if they were immunized in the school without considering the place where they live then it will affect number of numerators in each health center area (villages) in all 6 provinces.

5.6. Immunization Status Validation with Recorded Document for Basic Immunization

Basic immunization status in the survey had been assessed among children under five based on recall of the mothers (from the interview) and validated by the record (KIA book). If the children did not have KIA book, then validation will used Children Under Five Kohort Book or Immunization Registration book. However, in order to validate using Children Under Five Kohort book and Immunization Registration book in health center the survey faced many obstacles due to for record more than 1 year, ussualy health ceneter did not keep the record very well then the survey will have missing record for validation. However, in 6 provinces the children who had KIA book are 69,2% in average, therefore only among those children validation can be implemented for their basic immunization status.

5.7. Immunization Status Validation With Recorded Document for Measles and MR Immunization

MR immunization status in the survey had been assessed among children under 15 years old based on recall of the mothers (from the interview) and validated by the record (MR registration record). In order to validate the MR immunization status using MR Registration record in health center the survey faced many obstacles due to the MR immunization record officially was very stricted, then all the enumerators should have formal letter to have these MR information. However in 6 provinces, only view (less than 30%) of total sample MR status of the children could be validated. This proportion of children could be validated will produce the MR valid coverage. The MR valid coverage may be affected by the proportion. The low proportion of children can be validated will result to under/over estimated the MR valid coverage in the province.

5.8. Factors Associated to MR Immunization Coverage

Factors associated to MR immunization coverage in the assessment were measured in order to know which factors affect the coverage in the province. The factors was follow Health Believe Model which in the theory MR immunization coverage was affected by 4 factors which are: i)predisposing (age, sex, education level,etc). ii)enabling (accesibility and aviability). iii)reinforcing (and role of family and leaders) and iv)threat (side effect and inconvinient with immunization services).

Based on multivariate analysis the factors associated to MR immunization in the province wasagegroup, urban/rural, sex, education of mothers, mothers know measles, rubella, source of information from health provider, ource of informaton from health cadres, source of information from informal leader, information from TV and afraid with side effect. Therefore all those factors should be taken account in consideration to be intervened to increase community participation in the province.

5.9.   Obstacles

During implementation of MR campaign in the province, the assessment interviewed some key informants in order to know the obstacle during the campaign. This assessment found the following obstacles:

i.   Policy

MR campaign had been supported by all provinces and districts government. However all local government had different way in supporting the MR campaign in term of budget allocation for MR campaign implementation, direct supporting during implementation in the field. If the the local government (like the major or governor) had direct supporting in field implementation, the province or district more likely to have high MR immunization coverage.

ii.   Human resources

Human resources was play important role in successful of MR campaign implementation. This study found that districts with adequate number of human resources more likely to have high MR immunization coverage. This can be explain because with adequate number of human resources all MR campaign activities can be properly implemented.

iii.   Logistic

Some districts had problem with logistic, especially vaccines carrier, trasportasi and spuit. However all problems would not affect the MR campaign implementation.

Chapter 6. Conclusion and recommendations

6.1.   Conclusion

The assessment of MR Immunization coverage had been done in 6 provinces with 60 clusters (30 cluster of urban and 30 cluster of rural areas) in each province with selected by PPS. Three thousands sample in each province had been randomly selected in order to measure the coverage. All key informants from province, districts, health centers, villages and schools had been interviewed in order to complete the information of the survey. The result of the assessment are in the following:

i.   MR immunization coverage in all province was ranging from 88-96% where the lowest found at West Java and the highest was at East Java. The coverage was lower compare to the reported coverage in all provinces, except at Banten by looking the 95% confidence interval. The gap between the two coverage could be due to the underestimated target population, reported bias and information bias of the survey.

ii.   The MR coverage in urban area was ranging from 85,3%-95,5% and rural was ranging 86,9%-96,7%. The coverage in urban areas was lower than in rural areas in all provinces,except at Central Java. The different between urban area reflected the community participation in urban areas was worse than in rural areas. The community participation could be afffected by the following factors: predisposing(age,sex, education level, etc), enabling (accessibility and avaibility), reinforcing (culture and role of leader or family).

iii.   Factors associated to MR immunization status were: agegroup, urban/rural, sex, education of mothers, Mothers know Measles, Rubella, Source of Information from health provider, Source of informaton fro Health Cadres, Source of information from Informal Leader, information from TV and afraid with side effect

iv. Basic immuniation coverage in all provinces were: BCG (.>93%), DTP1 (92%), DTP2 (>87%), DTP3 (>82%), Polio1 (>93%), Polio 3(>87%), Polio4 (>76%) and Measles (>80%).   All the basic immunization coverage seemed to be slightly underestimated compared to the administrative/repoprted coverage. The different of the coverage might have some reasons such as: i) target population for reported coverage was underestimated. ii) reporting bias and. iii)information bias of the survey.

v. Based on in-depth interview the MR campaign in all provinces at Java island had achieved all the target. However some district had some obstacles related to human resources, logistic and budget allocation. All those obstacles seemed to be occured during implementeation of the campaign then it affect the coverage of MR.

6.2.   Recommendation

Based on the finding above, in order to achieve high coverage of MR immunization om the province some recommendation should be done in the province are in the folowing:

i.   The trarget population should be determined based on data of BPS and demographic section division of goverment office. If all goverment office at village level had accurate data in their population then all target children will be listed in the village as population list. Therefore data computerization should be implemented in village level using funding from ministry of village development (kementerian pembangunan desa).

ii.   Birth sertificate as obligation for all birth in village level and make computerized data based for all birth (birth sertificate). Then based on this birth sertificate data all survival children can be followed very well and more accurate.

iii.   If the village have good target population as mentioned above than all routine and MR immuniztion can be well plan and the immunization coverage can be achieved vary well

iv.   To increase community pariticipation in the province, some predisposing, enabling and reinforcing factors should be considere to take account to be intervened were: agegroup, urban/rural, sex, education of mothers, mothers know measles, rubella, source of information from health provider, source of informaton from health cadres,

source of information from informal leader, information from TV and afraid with side effect

v. The MR campaign should anticipate some obstacles such as: human resources, logistic and budget allocation.

VII.References

1. Yosephine P. Indonesia National Immunization Program : 2017;(October):16–8.

2. RI M. MEASLES ELIMINATION AND RUBELLA/CRS CONTROL (Goal & Objective). Jakarta; 2014.

3. WHO (WORLD HEALTH ORGANIZATION). V ACCINATION COVERAGE CLUSTER S URVEYS (DRAFT). Geneva, Swizerland: WHO, Geneva; 2015.

4. Miles M, Ryman TK, Dietz V, Zell E, Luman ET. Validity of vaccination cards and parental recall to estimate vaccination coverage: A systematic review of the literature. Vaccine [Internet]. 2013;31(12):1560–8. Available from: http://dx.doi.org/10.1016/j.vaccine.2012.10.089

5. C.Bain PW and. Essensial Epidemiology. Second. Brisbane Australia: Cambridge University Press; 2011. 1-178 p.

6. Aren.W and I. P. Epidemiology, Handbook. first. Springer-Verlag Heidelberg; 2005. 1-180 p.

7. A S. Epidemiology and Statistic. First. New York,USA: Oxford University Press; 1980. 1-145 p.

8. Institutes C, Health M, Welfare F. Coverage Evaluation Survey : Measles Rubella Vaccination Campaign Phase 1. 2017;1.

9. Measles and rubella vaccination campaign off to good start in Kyrgyzstan [Internet]. Available from: http://www.euro.who.int/en/countries/kyrgyzstan/news/news/2015/04/measles-and-rubella-vaccination-campaign-off-to-good-start-in-kyrgyzstan

10. Health MOF. Report Cambodia Post Measles-Rubella Follow-up Campaign Coverage Evaluation Survey – 2017. 2017;(August).