Factors Associated with the Use of the MCH Handbook in Puskesmas (Primary Health Care Centre) Rowosari, Semarang

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Abstract: Ministry of Health of the Republic of Indonesia launched the maternal and child health (MCH) handbook as information and family records in terms of maternal, infant, and toddler health. Kader (village health volunteers - VHVs) is an indirect target to use MCH handbook. This study aimed to analyze several factors related to the use of MCH handbook by VHVs in Puskesmas (primary health care centre) of Rowosari, Semarang. This is an explanatory study with a cross-sectional approach. The number of samples was 120 VHVs. Data analysis was carried out by analytical descriptive. The knowledge of VHVs related to the MCH handbook was low (40.8%) and the use of MCH handbook was poor (45%), while most of VHVs had supportive attitudes in terms of MCH handbook (84.2%). Multiple linear regression showed that there was a relationship between the length of time being VHVs (p=0.002) and knowledge (p=0.0001) with the use of MCH handbook. VHVs' knowledge in accordance with the contents of the MCH handbook is still necessary to be improved. Puskesmas is recommended to carry out refreshing activities for VHVs who still have a short time in working hours.

Keywords: MCH handbook, village health volunteers, kader, use of MCH handbook.

Introduction

Maternal Mortality Rate (MMR) is one of the important indicators of public health status. In general, this is influenced by health status, womens' economic empowerment, education level, and maternal and child (MCH) care during pregnancy and childbirth (World Health Organization, 2019). In 2017, Brebes was a regency in Central Java Province with the first worst maternal death (23 cases), then followed by Semarang city which ranked fourth (23 cases). According to the Health Profile of 2017, the MMR of Semarang city has decreased from 128.05 per 100.000 live births to 88.3 100.000 live births, and the cause of death in the 'other' category has increased from the previous year. This situation showed that the cause of maternal death during pregnancy, childbirth, and the postpartum was uncertain. Therefore, early detection of pregnancy is required to be carried out properly (Gaizauskiene et al., 2007; Provincial Health Office of Central Java, 2017).

The Ministry of Health of Indonesia launched MCH handbook containing information and results of family records to increase knowledge regarding the health of maternal, infant, and toddler (children under-five years) (Ministry of Health of the Republic of Indonesia, 2014). Recording of pregnant women that precise and accurate, accompanied by monitoring

intensively by families and health workers can early detect pregnancy complications, therefore, the process of giving birth and postpartum periods also proceed safely (Mori et al., 2015). Moreover, the use of MCH handbook plays an important role in generating sustainability of maternal, newborn, and child care to maintain the health of babies and toddlers (Aiga et al., 2016; Kaneko et al., 2017). Based on this situation, community participation is necessary to convey information related to the cause of death (Qomariyah et al., 2010; Rosato et al., 2008). In the technical instructions for the use of the MCH handbook, Kader (village health volunteers) is a indirect target whose participation can help in reducing the maternal mortality rate (Ministry of Health of the Republic of Indonesia, 2015).

Kader is village health volunteers (VHVs) who are voluntarily selected to carry out health promotion and contribute to providing accessible primary health care to the community, including MCH care (Horton et al., 2020; Jigssa et al., 2018; Kitamura et al., 2020). In Indonesia, an active kader or VHVs is someone who actively participates to carry out several activities in Posyandu (community-based integrated health post) and performs their roles and duties as VHVs. There are several tasks that carried out by VHVs, including counseling to mothers who live in nearby neighborhoods, as well as home visits to follow-up mothers in order to invite them to attend to the Posyandu. VHVs will visit a home that inhabited by children under-five years, pregnant women, and postpartum women (Andriani et al., 2016; Indonesian Ministry of Health, 2018). As a health professional, VHVs can provide information in terms of maternal and child health by utilizing various media, including MCH handbook (Nakamura, 2019). A previous study in Surabaya, Indonesia, showed that the use of MCH handbook by VHVs in Posyandu was low, where the source of counseling materials was not captured from the MCH handbook (Irwanto et al., 2019).

According to L. Greens' theory, the health of a community is influenced by behavior causes and non-behavior causes, where behavior causes are determined from predisposing factors, reinforcing factors, and enabling factors (Green, 1974). Furthermore, the behavior of VHVs in Posyandu in utilizing the MCH handbook is affected by the three factors referred in the L. Green theory. Results of the preliminary study with the midwives in Puskesmas showed that the provision of health information regarding the MCH handbook to the VHVs was carried out unscheduled and executed exclusively during routine meetings amongst VHVs. Based on these findings, a study was conducted to analyze several factors related to the use of MCH handbook by village health volunteers. This research was performed in the working area of Puskesmas (primary health care centre) of Rowosari, Semarang city, which consists of 5 villages: Rowosari, Tembalang, Meteseh, Bulusan, and Kramas.

Methods

Design, Study population, and Data collection

This research was explanatory research with study design cross-sectional. The population was active kader (village health volunteers or VHVs) who live in the working area of the Puskesmas (primary health care centre) of Rowosari which consists of 5 villages: Rowosari, Tembalang, Meteseh, Bulusan, and Kramas. From each village, there is several Posyandu (community-based integrated health post) with 15 VHVs. The sample was carried by cluster random sampling at Posyandu where the VHVs had not received counseling about the MCH handbook. The selected sample was 120 kader or VHVs from eight Posyandu located in the 4 villages: Tembalang,

Bulusan, Rowosari, and Meteseh. An overview of sample selection with cluster random sampling can be seen in **Table 1.**

Table 1 Distribution of kader or village health volunteers (VHVs) who selected as samples based on the location of villages and Posyandu (community-based integrated health post)

Village	Number of community-based integrated health post	Number of VHVs
Tembalang	2	30
Bulusan	2	30
Rowosari	2	30
Meteseh	2	30
Total	8	120

Data analysis

Data analysis was carried out descriptively and analytically. Descriptive analysis was performed to describe the research variables. Analytic analysis was performed using Spearman rank correlation test and chi-square to analyze the relationship between the independent variables and the dependent variable, then followed by multiple linear regression to analyze the joint effect of the independent variable on the dependent variable.

Result

Characteristics of the sample

The number of respondents was 120, the mean of VHVs age was 40 years, whereas the youngest was 22 years old and the oldest was 55 years old. The lowest income earned by respondents was 500.000 rupiah, while the highest income was 10.000.000 rupiah. Most of half respondents had a level education of high school or vocational school (40.8%), where the majority of the occupations were housewives (90.8%). Respondents who did not obtain the training in terms of the use of the MCH handbook account for 40%. According to **Table 2,** it can be seen the distribution of respondents who participated in this study.

Table 2 Distribution of characteristics of the sample

	n	%
Age of Respondents		
Minimum = 22 y.o., maximum = 55 y.o., mean=40 y.o., SD = 7 y.o.		
Working period of being VHVs		
Minimum = 1 year, maximum = 34 years., mean=7.4 years, SD = 6.6 years.		
Income		
Minimum = 500.000 rupiah, maximum=10.000.0000 rupiah, mean =2.429.000		
Educational level		
Not going to school	1	0,8

Elementary school	21	17,5
Junior high school	33	27,5
Senior high school/vocational school	49	40,8
Diploma/bachelor's degree	16	13,3
Occupation		
Housewive	109	90,8
Entrepreneur	9	7,5
Others	2	1,7
Training regarding the use of MCH handbook		
Yes	72	60,0
No	48	40,0
Presenter of the training		
Health office	2	1,7
Districts	1	0,8
Village	2	1,7
Leader of village health volunteers	1	0,8
University students	5	4,2
PKPU (the national humanitarian foundation)	1	0,8
PLKB (field instructor of family planning)	1	0,8
Posyandu (community-based integrated health post)	2	1,7
Puskesmas (primary health care centre)	57	47,5

Description of Study Variable

Knowledge of kader (village health volunteers or VHVs) was measured from several questions associated with the contents of the MCH handbook, who should read the MCH handbook, the use of MCH handbook, and various points in accordance with pregnancy, postpartum maternal health checks, and child health. Respondents' attitudes were measured from several questions to determine the VHVs support for the use of MCH books. The use of MCH books by VHVs was measured by several questions, specifically how far VHVs have read the MCH handbook, how often VHVs have read the MCH handbook, and what VHVs have read. The results showed that some VHVs (59.2%) had high knowledge, most of VHVs (84.2%) supported the MCH handbook and some VHVs (55%) had used MCH books favorably, as shown in **Table 3**.

Table 3 Description of study variable

Variables	n	%
Knowledge		
Low	49	40,8
High	71	59,2
Total	120	100,0
Attitude		
Did not support	19	15,8

Support	101	84,2
Total	120	100,0
The use of MCH handbook		
Poor	54	45,0
Good	66	55,0
Total	120	100,0

According to **Table 3**, it can be seen that the respondents' knowledge is still lacking. This was caused by several questions were answered incorrectly, including the MCH handbook containing postpartum maternal health records (15.8%), danger signs during postpartum (19.1%), the MCH handbook that needs to be read by parents or family (24.1%), or by husband (13.4%). In addition, the MCH handbook contains information concerning TT immunization to prevent tetanus toxoid in infants (13.4%) and information regarding the need of preparing blood donors for pregnant women (40.8%). The details of the distribution of respondents' respond can be seen in **Table 4.**

Table 4 Distribution of respondents' answers in accordance with the knowledge of the MCH handbook

Knowledge	**Correct**		**Wrong**	
	n	**%**	**n**	**%**
MCH Handbook Content				
a. Pregnant mother health record	108	90,0	12	10
b. Maternity health record	104	86,7	16	13,4
c. Postpartum health record	101	84,2	19	15,8
d. Child health record	116	96,7	4	3,3
Target of MCH handbook reader				
a. Mother	118	98,3	2	1,7
b. Husband	104	86,7	16	13,3
c. Parents/family	91	75,8	29	24,1
d. Village health worker	116	96,7	4	3,3
Place that required to bring MCH handbook				
a. Puskesmas (primary health care centre)/midwife/doctor	118	98,3	2	1,6
b. Posyandu (community-based integrated health post)	117	97,5	3	2,5
c. Pregnant mother class	93	77,5	27	**22,5**
Information about pregnancy check up in MCH handbook				
a. Body height	112	93,3	8	6,6
b. Circumference of upper arm	106	88,3	14	11,7
c. Body weight	113	94,2	7	5,8
d. Daily consume of Fe pill in 90 days	103	85,8	27	14,1
e. Blood pressure every check up	110	91,7	19	8,3

f. Immunization of TT (Tetanus Toxoid) to prevent tetanus in infants	104	86,7	30	13,4
g. Familly planning	96	80,0	43	20,0
h. Prepare prospective blood donors for pregnant women	71	59,2	82	40,8
Information about pregnant women in MCH handbook				
a. Sign of giving birth	108	90,0	12	10,0
b. Process of giving birth	105	87,5	15	12,5
c. Problems that might happen in giving birth	107	89,2	13	10,8
Information about postpartum period of mother in MCH handbook				
a. How to breastfeed infant	110	91,7	10	8,3
b. Maternal care after giving birth	101	84,2	19	15,8
c. Danger signs in postpartum period	97	80,8	23	19,1
Information about child health in MCH handbook				
a. Child immunization records	118	98,3	2	1,7
b. Child development records	118	98,3	2	1,7

As seen in **Table 5,** it can be known that generally respondents supported the use of the MCH handbook. This can be concluded from several questions answered in agreement by the respondents, specifically, kader (village health workers or VHVs) used the MCH handbook as guidance for counseling related to child health (70%), VHVs used the MCH handbook as guidance for counseling related to pregnant health examination or check-up (68.3%), VHVs should routinely check in accordance with the completeness of records in the MCH handbook, for example, the completeness of the pregnant women health (68.3%) and the maternal and child health (74.2%).

Table 5 Distribution of respondents' (volunteer health village or VHVs) answer in accordance with attitude of MCH handbook

Attitude	Disagree		Doubt/do not know		Agree		Strongly agree	
	n	%	n	%	n	%	n	%
The advantages of the MCH handbook as guidance for VHVs								
Counseling related to pregnant women check-up	2	1,7	7	5,8	82	68,3	29	24,2
Treatment for maternal health after giving birth	2	1,7	8	6,7	82	68,3	28	23,3
Counseling related to child health	3	2,5	2	1,7	84	70,0	31	25,8
Examining the completeness of recording in the MCH handbook								

Pregnant women in the MCH handbook	6	5,0	9	7,5	83	69,2	22	18,3
Child health in the MCH handbook	4	3,3	4	3,3	89	74,2	23	19,2

Based on **Table 6,** it can be seen that in terms of the use of the MCH handbook, almost all VHVs (95.8%) stated that they had read the MCH handbook. However, there were only 39.2% VHVs who read all topics in the MCH handbook. In addition, the number of VHVs who answered that did not have a specific schedule or time to read the MCH handbook account for 96.7%. Kader or village health volunteers (VHVs) used the MCH handbook for counseling, but there was VHVs who have never read the MCH handbook before providing health services at the Posyandu or community-based integrated health post (32.5%), never invite mothers to read the MCH handbook in accordance with postpartum maternal health (20%), and never visited mothers' home to check maternal health records (41.7%) and child health (41.7%). Overview of respondents' answers regarding the utilization of the MCH handbook can be seen in **Table 6**, **Table 7**, and **Table 8**.

Table 6. Respondents' (VHVs) respond in accordance with the use of MCH handbook

Questions	Yes		No	
	n	%	n	%
Has read the MCH handbook	115	95,8	4	3,3
Has read all topics in the MCH handbook	47	39,2	73	60,8

Table 7 Reading time of MCH handbook

Reading time	Unscheduled		Weekly		Daily	
	n	%	n	%	n	%
Reading time of the MCH handbook	116	96,7	3	2,5	1	0,8

Table 8 Distribution of respondents' (VHVs) respond related to the MCH handbook reading

Questions	Never		Sometimes		Always	
	n	%	n	%	n	%
Read the MCH handbook before providing health services in Posyandu	39	32,5	60	50,0	21	17,5
Persuade mothers to implement the messages in the MCH handbook to find out the pregnant women health	20	16,7	49	40,8	50	41,7
Persuade mothers to implement the messages in the MCH handbook to find out the women health during postpartum	24	20,0	44	36,7	51	42,5
Persuade mothers to implement the messages in the MCH	16	13,3	39	32,5	65	54,2

handbook to find out the child health						
Home visit and check maternal health records in the MCH handbook	50	41,7	49	40,8	21	17,5
Home visit and check child health records in the MCH handbook	50	41,7	50	41,7	20	16,7
Use mothers' Kartu Menuju Sehat (KMS - health card) in the MCH handbook to monitor the development of the toddlers	6	5,0	26	21,7	88	73,3
Carry out the recording of the result of weighing in the MCH handbook	9	7,5	9	7,5	102	85,0
Remind pregnant women regarding sheets in the MCH handbook to register school	37	30,8	23	19,2	60	50,0

Based on **Table 9,** it can be seen that there were respondents who stated that place to use the MCH handbook was in the Posyandu (community-based integrated health post), accounts for 55%, while 35% of respondents stated that place was in the 'Dasa Wisma' meeting or PKK.

Table 9 Place to use the MCH handbook

Questions	Posyandu		Home		Anytime		'Dasa Wisma' meeting/PKK	
	n	%	n	%	n	%	n	%
Place to use the MCH handbook to provide health information	66	55,0	4	3,3	8	6,7	42	35,0

Bivariate Relationship between Independent Variables and the Use of the MCH handbook by Kader (Village Health Volunteers - VHVs)

According to the results of Spearman rank correlation test, it showed that there was a relationship between knowledge (r=0.351; p=0.0001), attitude (r=0.242; p=0.008), age (r=0.403; p=0.0001), length of time being VHVs (r =0.297; p=0.001) with the use of the MCH handbook. The details of the results from Spearman rank correlation test can be seen in **Table 10.**

Table 10 Relationship between independent variables and the use of the MCH handbook

Variables	Coef. Correlation/ Chi Square	*p-value*	Relationship
Knowledge	0,351	0,0001	Yes
Attitude	0,242	0,008	Yes
Age	0,403	0,0001	Yes

Length of being VHVs	0,297	0,001	Yes
Income	-0,060	0,514	No
Educational level	0,212[a]	0,645	No

Notes: a (chi square test)

Multivariate Relationship between Independent Variables and the Use of the MCH Handbook

This study performed multivariate analysis using linear regression with the stepwise method. According to **Table 11,** the results of R square can be interpreted that knowledge and length of being VHVs affect simultaneously the use of the MCH handbook by VHVs, accounts for 39.3%, while the remaining of 60.7% were influenced by other variables.

Table 11 Multivariate relationship between 2 variables (knowledge and length of being VHVs) with the use of MCH handbook for counselling purpose

Variables	Unstandardize β	Standardize β	p
Knowledge	0,227	0,455	0,0001
Length of being VHVs	0,179	0,224	0,002

R Square: 39,3%

Discussion

In the health sector, education affects a person's behavior. The provision of health information will be more conceived with good education and understanding (Mocan & Altindag, 2014). In developing countries, health information from certain sources with good quality becomes one of the most effective key interventions to improve health (Khanna et al., 2013). According to the research conducted, generally, kader (village health volunteers or VHVs) have a high educational level. There was VHVs account for 40.8% are high school or vocational high school graduates and 13.3 are university graduates. This result was in accordance with previous research conducted by Yanagisawa, et al regarding the impact of using the MCH handbook, that educational level affected the understanding and acceptance of VHVs in the provided training related to the delivery of health education for mothers (Yanagisawa et al., 2015).

A person's work performance in the health sector is directly impacted by attitudes (Mutiso et al., 2017; Rahman & Kodikal, 2017). Attitude is one of the predisposing factors that facilitate behavior (Hennelly et al., 2020). This study showed that there was a relationship between attitudes and the use of the MCH handbook by kader or village health volunteers - VHVs (r= 0,242; *p value*= 0,008). This result means that VHVs who supported the use of the MCH handbook as a source of educational materials will use the MCH handbook more often to read. The presence of VHVs who were not supporting the MCH handbook accounts for 15.8%. This situation causes the knowledge of VHVs in terms of changing attitudes to be required. The previous study conducted by Woldie, et al. showed that health education delivered from VHVs can positively influence mothers' attitudes and practices (Woldie et al., 2018). As village health volunteers (VHVs), cadres contribute as liaisons between the village and the community, staff of primary health care centres, NGOs, and the Ministry of Health. It can result in health services being more effective (Diese et al., 2018; Watt et al., 2016). In addition, poor attitudes and behavior of VHVs can be caused by low knowledge in accordance with maternal and child health (Bakibinga et al., 2020).

This study showed that the youngest age of VHVs was 22 years old, while the oldest was 55 years old, with a mean and SD (40 ± 7 years). There was a significant relationship between age and the use of the MCH handbook (r=0.403; *p value*=0.0001), therefore, the MCH handbook will be more utilized if the VHVs were older. Village health volunteers (VHVs) have a better understanding of utilizing MCH handbook to provide and disseminate health education (Li et al., 2006). However, the provision of health education on MCH handbook encounters obstacles in times. This is because of conflicts with local culture (Diese et al., 2018; Yanagisawa et al., 2015). In rural areas, inequality in MCH services is encountered at times. Kader - VHVs and health workers play an important role in reducing inequality to obtain MCH services. For this reason, they need to be encouraged to use every information contained in the MCH handbook to increase the quality of MCH services in a country (World Health Organization, 2014).

Village health volunteers - VHVs or kader who have longer working periods will affect the establishment of the knowledge or skills that possessed. This will lead to the positive respond to health attitudes and behavior. This study showed that the shortest length of being VHVs was 1 year, while the longest was 34 years with a mean and SD (7.4 ± 6.6 years). There was a significant relationship between the length of being VHVs and the use of the MCH handbook (r=0.297; *p value*=0.001). This is indicating that the longer the cadres' tenure, the utilization of MCH handbook will be more excellently. The use of MCH handbook also causes the provision of more comprehensive health education and counseling with better accuracy (Hagiwara et al., 2013). Previous study performed by Balogun, et al showed that training in accordance with the use of MCH handbook could improve the performance of health workers in delivering the material contained there (Balogun et al., 2020). In addition, the MCH handbook contains guidelines and references for effective aftercare of maternal health (Kaneko et al., 2017).

Conclusion

In conclusion, kader or village health volunteers - VHVs are volunteers chosen by the community as health promoters to carry out Posyandu (community-based integrated health post) or other roles. There were several VHVs that have low knowledge in terms of the MCH handbook (40.8%), supportive attitudes to use the MCH handbook (84.2%), and do not use the MCH handbook (45%). Furthermore, VHVs' knowledge in accordance with the contents of the MCH handbook is still necessary to be improved, specifically related to blood donors, TT - tetanus toxoid, postpartum maternal health. There was a joint relationship between the length of being VHVs and knowledge with the use of the MCH handbook, whereas knowledge has a greater impact on the use of the MCH handbook.

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