

ORIGINAL RESEARCH

# Validity and Reliability of Indonesian Public Health Nursing Competencies in Achieving Indonesian Healthy Program with a Family Approach: A Pilot Study



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## Abstract

**Background:** Indonesia has the Indonesian Healthy Program with a Family Approach (IHP-FA) to solve various health problems in the country. The public health providers in Indonesia play a very vital role in realizing this program. There have not been clear reference standards regarding the Indonesian Public Health Nursing (IPHN) competencies. This condition causes the provision of nursing services in public health centers (PHCs) to be suboptimal.

**Purpose:** This study aimed to identify the validity and reliability of the core competencies of IPHN standards in a practice setting to achieve the IHP-FA.

**Methods:** A pilot study using a descriptive correlational study was conducted among 55 coordinators of public health nursing (PHN) program from 50 PHCs in Jember, Indonesia. The IPHN practices were accessed using the five PHN core competencies (including activities in PHCs and nursing care for follow-up patients, family, special needs group in the community, and community). The IHP-FA was measured using 12 indicators. Content Validity Index (CVI) was used to examine the validity of core competencies. Internal consistency was explored using Cronbach's  $\alpha$  coefficient. Construct validity using the known-groups technique was explored to measure the correlational between IPHN competencies and indicator of IHP-FA.

**Results:** The CVI indicated adequate content validity (0.80-0.10) and high reliability (Cronbach's alpha coefficient=0.81). There was a significant correlation between five core IPHN competencies and achievement of IHP-FA (safe birth delivery, immunization, growth and development, management of tuberculosis, smoking, and access to clean water).

**Conclusion:** IPHN competencies contain valid, reliable, and psychometrically robust measures. However, some programs in IHP-FA could not be achieved with five IPHN core competencies, demonstrating the need for developing the IPHN competencies in the future.

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## 1. Introduction

Family health nursing, as a primary form of family service in the community, can facilitate healthy family development through the preservation of healthy values in family institutions and family dynamics based on the family structure and function (Susanto et al., 2018). The government of Indonesia designed the Indonesian Healthy Program through Family approach (IHP-FA) (Ministry of Health Republic of Indonesia, 2016a). This program is realized through the fifth agenda of the 10 Indonesia's president agenda (called in *Bahasa Indonesia: Nawa Cita*) (Rahayu, 2017). The *Nawa Cita* program is related to 17 indicators in Sustainable Development Goals (SDGs) (World Health Organization, 2018), which is to improve the quality of life of the Indonesian people (Ministry of Health Republic of Indonesia, 2016b). On the other hand, families in Indonesia experience problems of family growth and development, both at risk or vulnerable to health problems (Nur et al., 2017; Susanto, Yunanto et al., 2019). This is due to the suboptimal practice of family nursing care services through home visits within the framework of the public health nursing (PHN) program at the public health centers (PHCs) (Susanto, Bachtiar et al., 2019). Therefore, a comprehensive effort to implement PHN is needed to achieve the IHP-FA program at the PHCs.

The IHP-FA consists of four priority areas which include decreasing maternal and infant mortality rates, decreasing stunting prevalence, controlling infectious diseases, and controlling non-communicable diseases (Ministry of Health Republic of Indonesia, 2016b). The target achievement of the SDGs program in Indonesia is still low in the health sector, which includes 3.9% of malnutrition and 11.5% of stunting among under-five children, 17.3% of malnutrition, and 48.9% of anemia among pregnant women (Ministry of Health Republic of Indonesia, 2018). Maternal and child health problems are the fourth indicator of SDGs and priority areas of the IHP-FA program, which are the key to the success of nation-building by describing the socio-economic conditions of the community and their abilities (Ministry of Health Republic of Indonesia, 2016b), thus requiring efforts to improve health services in the community through PHN in reducing the risk and vulnerability of health problems in the community.

An imbalance between host, agent, behavior, and the environment results in changes in the epidemiological transition of infectious diseases in Indonesia. Furthermore, the prevalence rate for communicable diseases in Indonesia is very high, such as 0.4% of tuberculosis, 4% of pneumonia, 6.8% of diarrhea, 0.2% of hepatitis, and 0.4% of malaria. Meanwhile, changes in unhealthy lifestyles that lead to the problem of chronic diseases or non-communicable diseases are increasing in Indonesia, such as 2.4% of asthma, 1.8% of cancer, 10.9% of stroke, 3.8% of kidney diseases, 7.3% of joint and bone diseases, 2% of diabetes, 1.5% of heart diseases, and 8.8% of hypertension (Ministry of Health Republic of Indonesia, 2018). Furthermore, infectious and chronic diseases are triggered by unhealthy lifestyles on the meaning of healthy living and self-improvement desired by individuals and can be changed through health promotion (Pender et al., 2016), thus requiring adaptation because it becomes a burden on family dependents that will be able to weaken general health conditions in the community.

Maternal and child health problems, infectious diseases, and chronic diseases in the community require comprehensive and sustainable treatment. Handling can be done through prevention, promotion, and protection programs at the PHCs to support the sustainability of the SDGs and the achievement of IHP-FA through the PHN program. Meanwhile, the Ministry of Health of Indonesia made regulation of public health nurses (PHNs) duties for PHN services to achieve healthy programs in the PHCs (Ministry of Health Republic of Indonesia, 2006). However, regarding the evaluation of the results of 2015, PHCs still lack for implementing PHN, because only 663 out of a total of 9,655 of PHCs (0.069%) were able to implement PHN services according to the guidelines in 27 provinces from the 33 existing provinces (Ministry of Health Republic of Indonesia, 2015). Furthermore, obstacles in the implementation of the PHN services will have an impact on the implementation of the IHP-FA program at the PHCs in achieving 12 indicators of IHP-FA.

Furthermore, previous studies showed that there was a relationship between PHNs' knowledge and attitudes and the performance of the PHN services that resulted in low coverage of performance implementation PHN services (Susanto, Bachtiar et al., 2019). In an effort to increase the role of PHN, it is necessary to collaborate with the community and family through empowerment and partnership competencies of PHN for implementing PHN services (Widyarani et al., 2020). Furthermore, PHNs in Indonesia have only focused on the indicators of achievements of the program without looking at the extent to which the process of PHNs' activities in the field is related to the role of PHNs based on the indicators of inputs, processes, and outputs of PHN activities (Susanto, Bachtiar et al., 2019). This situation needs a solution for developing PHNs' duties for PHN services to achieve healthy programs in the PHCs. On the other hand, there are no studies in Indonesia setting to develop five core IPHN competencies from the Indonesian Ministry of Health in 2006 (Ministry of Health Republic of Indonesia, 2006), although this regulation has become a standard to evaluate the performance of PHNs in Indonesia. The present study aimed to identify the validity and reliability of core competencies for the IPHN standards in a practice setting by public health professionals for the achievement of IHP-FA in an Indonesian context.

## **2. Methods**

### **2.1 Research design**

A descriptive correlational study design was used to explore the IPHN core competencies for the achievement of the IHP-FA.

## *2.2 Setting and sample*

This study was conducted in May 2019 in Jember regency, East Java, Indonesia. Fifty-five coordinators of PHN program from 50 PHCs in Jember were recruited, involving at least 1 PHN from each PHCs. The data from the Department of Public Health of Jember reported that the achievement of PHN services was only 44.87% of caring for community groups from 50 PHCs (Susanto et al., 2019). Therefore, all coordinators of PHN program from 50 PHCs were included to do an assessment on their competencies. The inclusion criteria in this study were the coordinator of PHN program, length of duties as the coordinator of PHN program was at least 3 months, and had a license of coordinator of PHN program.

## *2.3 Measurement and data collection*

### *2.3.1 Tools development*

The core competencies of PHN in this study were developed based on the five core IPHN competencies (including activities in PHCs and nursing care for follow-up patients, family, special needs group in the community, and community) with regard to the regulation from the Ministry of Health of Indonesia in 2006 (Ministry of Health Republic of Indonesia, 2006). These competencies consist of 35 items that are divided into five core competencies, including activities in PHCs (9 items), nursing care for follow-up patients (7 items), nursing care for family (7 items), nursing care for special needs group in the community (5 items), and nursing care for community (6 items). For developing the tool in this study, the IPHN competencies were accessed using a Likert scale (always=4; often=3; sometimes=2; and never=1). Then, all of the items from the questionnaire were summed to obtain the total score of IPHN and the overall score of five cores of IPHN, respectively.

### *2.3.2 Measurement*

A self-administered questionnaire was used to measure the sociodemographic data of the coordinators of PHN program (including age, gender, educational background, profession status, length of becoming of the coordinator of PHN program, occupation status, PHN training program, and experience of working in a hospital). The IPHN competencies were measured using the PHN competencies developed by the researchers as described in the previous section (tool development).

For the IHP-FA program, we used the IHP-FA from the Ministry of Health of Indonesia in 2016 (Ministry of Health Republic of Indonesia, 2016a). The IHP-FA was measured using 12 indicators (including family planning, safe birth delivery, immunization, exclusive breastfeeding, growth and development, management of tuberculosis, management of hypertension, rehabilitation mental illness, smoking, coverage health insurance, access to clean water, and healthy sanitary). The secondary data of the IHP-FA report were also accessed in this study as reported by PHNs monthly to the Department of Public Health of Jember regency from 50 PHCs.

For the purpose of data collection, 55 coordinators of PHN program from 50 PHCs were invited to attend this study in the Department of Public Health of Jember Regency. These participants were informed of the aim and procedures of this study. They signed informed consent for their participation.

## *2.4 Data analysis*

This study used descriptive and correlational data analyses. Descriptive statistics included frequencies and percentages for summarizing categorical measures. Then, median and standard deviation were used for summarizing continuous measures.

Content Validity Index (CVI) was employed to determine item validity (Polit & Beck, 2017). Three experts of community and family health nurses were asked to rate each of the 35 items of IPHN competencies based on relevance and clarity for measuring the PHNs duties for PHN services to achieve healthy programs in the PHCs. The questions rated employed a four-point Likert scale with a score of 1 meaning not relevant, a score of 2 meaning somewhat relevant, a score of 3 meaning quite relevant, and a score of 4 meaning highly relevant. The survey's internal consistency was assessed using Cronbach's alpha. In reliability analysis, means and standard deviations of the items were examined to measure the item difficulty for judgment and

endorsement purposes, while the item-total correlation was employed to examine item discrimination (Susanto et al., 2018).

Finally, construct validity using the known-groups technique was performed to refer to an instrument's ability to differentiate between the coordinators of PHN program competencies on the achievement of IHP-FA. A Pearson's product moment was used to measure the correlational between coordinators of PHN program competencies and indicator of IHP-FA. To determine the statistical significance based on the assumption of the appropriate test was performed using a two-tailed significance level of 0.05.

### 2.5 Ethical considerations

This study was approved by the Institutional Review Boards (IRB) of the Faculty of Dentistry, Universitas Jember, Indonesia (reference number 189/UN25.8/KEPK/DL/2018). All participants signed informed consent for their participation.

## 3. Results

### 3.1 Characteristics of participants

Table 1 shows that the mean age of the participants was 37.1 years, and the mean of length of becoming PHN coordinator was 10.9 months. The majority of the participants were males (60%) and hold Diploma 3 of nursing/midwifery (60%). Regarding the core competencies for IPHN standard from three expert panels, the content validity index indicated adequate content validity (0.80–0.10).

**Table 1.** Characteristic of participants (n= 55)

Variable	f	%	Mean ± SD
Age (year)			37.1 ± 8.9
Gender			
Male	33	60	
Female	22	40	
Education			
Diploma 1 (Nursing)	1	1.8	
Diploma 3 (Nursing and Midwifery)	33	60	
Diploma 4 (Midwifery)	1	1.8	
Bachelor of nursing	3	5.5	
Bachelor of public health	16	29.1	
Master of public health	1	1.8	
Status of profession			
Nurse (Diploma)	7	12.7	
Nurse (RN)	5	9.1	
Midwifery	28	50.9	
Sanitarian	2	3.6	
Nutritionist	1	1.8	
Public health	12	21.8	
Length of becoming PHN coordinator (month)			10.9 ± 7.2
Status occupation			
Public government	38	69.1	
Private	12	21.8	
Temporary	5	9.1	
Training PHN program			
Attending	2	3.6	
Not yet	52	94.5	
Having experience working in a hospital			
No	42	76.4	
Under-five years	10	18.2	
More than five years	2	3.6	

### *3.2 Internal consistency of IPHN competencies*

Table 2 indicates that the core competencies of IPHN standards had high reliability (Cronbach's alpha coefficient=0.814), including activities in PHCs (Cronbach's alpha=0.961), nursing care for follow-up patient (Cronbach's alpha=0.946), nursing care for family (Cronbach's alpha=0.974), nursing care for special needs group in community (Cronbach's alpha=0.963), and nursing care for community (Cronbach's alpha=0.966). In Figure 1 (see Appendix 1), from 12 indicators of IHP-FA, the top three achievements of PHN activities were 89.6% for health care of mental illness patients, 86.1% for family planning with contraceptives and 82.7% for birth delivery with midwifery.

### *3.3 Construct validity of the correlation between IPHN competencies and IHP-FA indicators*

Table 3 indicates that there was a significant correlation between the five core IPHN competencies (for activities in PHCs, nursing care for follow-up patient, nursing care for family, nursing care for special needs group in the community, and nursing care for the community) and the achievement of IHP-FA ( $p < 0.05$ ). However, there was no correlation between the total score of five core IPHN competencies and the achievement of IHP-FA ( $p > 0.05$ ). The core competencies of PHN for activities in PHCs were correlated with safe birth delivery with midwifery, basic immunization for under-five children, and monitoring growth and development of under-five children. Meanwhile, core competencies of public health professionals for nursing care for follow-up patients were correlated with safe birth delivery with midwifery, basic immunization for under-five children, monitoring growth and development of under-five children, management of tuberculosis patients, and access to clean water. Then, core competencies for nursing care for family and nursing care for the community were correlated with safe birth delivery with midwifery and stopping smoking habit in the family. Furthermore, the core competencies of PHN for nursing care for special needs groups in the community was only correlated with stopping smoking habits in the family.

## **4. Discussion**

The IPHN competencies are a valid and reliable instrument for measuring the coordinators of PHN program' duties and PHN services to achieve healthy programs in the PHCs and predict the achievement of IHP-FA. The competencies contained 35 items with five core competencies (including activities in PHCs, nursing care for follow-up patient, nursing care for family, nursing care for special needs group in the community, and nursing care for a community) with adequate content validity (0.8-0.10), and high reliability (overall Cronbach's alpha=0.84). The five core competencies of IPHN are correlated with the achievement of IHP-FA, although some of the core competencies are not predictable for the achievement of IHP-FA.

The IPHN competencies that contained 35 items with five core competencies are valid and reliable, although the items are different from the Quad Council Practice Competencies (QCPC) for PHN (Swider et al., 2013). QCPC for PHN consisted of eight core competencies with a total 79 of items (including analytic and assessment skills, policy development/program planning skills, communication skills, cultural competency skill, the community of dimensions of practice skills, public of health sciences skills, financial management and planning skills, and leadership and systems thinking skills) and ten domains competencies of primary health care professional (professional values, communication, teamwork, management, community-oriented, health promotion, problem-solving, health care, and education and basic public health sciences) (Witt & de Almeida, 2008). Whereas in this study, the IPHN competencies include five core competencies with 35 items, such as activities in PHCs, nursing care for follow-up patient, nursing care for family, nursing care for special needs group in the community, and nursing care for community (Ministry of Health Republic of Indonesia, 2006). However, a previous study reduced the QCPC for PHN to six factors that integrated important concepts of both the nursing process and the intervention wheel (Reckinger et al., 2013). The differences in this competencies may be explained that IPHN competencies are just focused on the duties of coordinators of PHN program for their activities in PHN services. The five core competencies of IPHN are included in both of the core competencies of the QCPC for PHN (including analytic and assessment skills and community of dimensions of practice skills) (Widyarani et al., 2020). Therefore, the IPHN competencies should be developed that used confirmatory factor analysis with QCPC for PHN.

**Table 2.** Item means, standard deviation, corrected item to total correlations, squared multiple correlations, and alpha if item deleted for PHN competencies scale (n= 55)

Competency of PHN	Mean	SD	CITC	SMC	AID
Activities in PHCs	Cronbach's alpha (α)= 0.961				
Nursing care for out-patient and in-patient	3.07	1.24	0.86	0.81	0.95
Case finding and early detection for out-patient	3.15	1.23	0.82	0.72	0.96
Provide health education	2.85	1.10	0.81	0.74	0.96
Observation and evaluation adherence of medication	2.84	1.13	0.83	0.75	0.96
Case reference or case reports with health care workers in PHCs	2.87	1.17	0.84	0.77	0.96
Provide health counseling	3.04	1.17	0.89	0.82	0.95
Intervention delegation of authority regarding procedures operational standard	2.96	1.10	0.80	0.75	0.96
Provide therapeutic environment during health care services in PHCs	3.15	1.14	0.86	0.83	0.95
Nursing documentation	3.05	1.16	0.81	0.74	0.96
Nursing care for follow-up patient	Cronbach's alpha (α)= 0.946				
Case finding which cross-contact diseases in one home	2.53	0.90	0.72	0.59	0.95
Provide health education for patients and family	2.58	0.97	0.83	0.76	0.94
Observation and evaluation adherence of medication	2.62	0.99	0.85	0.76	0.93
Home visit/home health nursing regarding the schedule	2.53	0.92	0.87	0.79	0.93
Provide direct care and indirect care to fulfill the basic needs of the patient	2.62	1.03	0.84	0.79	0.93
Provide health counseling	2.82	1.00	0.85	0.76	0.93
Nursing documentation	2.75	1.09	0.78	0.63	0.94
Nursing care for family	Cronbach's alpha (α)= 0.974				
Identify family with risk/vulnerable/poverty related to health in the community	2.49	0.96	0.93	0.93	0.97
Case finding which cross-contact diseases in one home	2.45	0.94	0.91	0.91	0.97
Provide health education for the family as a system of care	2.44	0.92	0.92	0.91	0.97
Home visit/home health nursing regarding the schedule	2.33	0.88	0.91	0.92	0.97
Provide direct care and indirect care to fulfill the basic needs of the patient	2.47	0.96	0.88	0.83	0.97
Provide health care regularly based on nursing care plan for long-term care	2.40	0.89	0.90	0.87	0.97
Provide health counseling in home	2.53	0.96	0.91	0.84	0.97
Nursing documentation	2.56	1.03	0.82	0.75	0.97

**Table 2.** Continued

Competency of PHN	Mean	SD	CITC	SMC	AID
Nursing care for special needs group in the community	Cronbach's alpha ( $\alpha$ )= 0.963				
Identify risk factors related to health problem among the groups in the community	2.36	0.97	0.92	0.90	0.95
Provide health education based on the groups' needs	2.38	0.93	0.94	0.90	0.95
Provide direct care for patients in the groups who need nursing care	2.42	0.92	0.92	0.87	0.95
Motivate for forming, guidance, and evaluation health cadres regarding the group	2.27	0.89	0.86	0.76	0.96
Nursing documentation	2.38	1.06	0.85	0.75	0.96
Nursing care for the community	Cronbach's alpha ( $\alpha$ )= 0.966				
Identify health problem that founded in the community area related to specific of diseases	2.35	0.93	0.89	0.91	0.96
Encourage participation through motivating the community to form community-based health care	2.35	0.93	0.90	0.87	0.96
Provide health education for the community	2.35	0.89	0.96	0.94	0.95
Motivate to form, develop, and evaluate health cadres in the community	2.29	0.87	0.89	0.81	0.96
Implementing, following, and monitor of clean living and healthy behavior	2.45	0.94	0.88	0.81	0.96
Nursing documentation	2.40	1.01	0.81	0.77	0.97
Overall alpha for PHN competencies	0.814				

*Note.* PHN=Public health nurses; PHCs=Public health center. SD=Standard deviation; CITC=Corrected item to total correlations; SMC=Squared multiple correlation; AID=alpha if item deleted

**Table 3.** Correlation between PHN competencies and coverage 12 indicators of healthy of Indonesia with a family approach

12 indicators of healthy of Indonesia with a family approach	PHN Competencies					
	A	B	C	D	E	F
Family planning with contraceptive	-0.103	0.197	0.183	0.079	0.056	1.000
Birth delivery with midwifery	0.379**	0.397**	0.402**	0.134	0.382**	0.225
Basic immunization for under five	0.277*	0.319*	0.210	-0.039	0.263	0.068
Exclusive breastfeeding	0.250	0.248	0.100	0.012	0.206	0.035
Monitoring growth and development of under five	0.279*	0.282*	0.205	0.002	0.257	0.110
Management of tuberculosis patient	0.085	0.279*	0.198	0.132	0.208	0.247
Management of hypertension patient	-0.007	0.051	0.076	-0.044	0.047	1.000
Healthcare for mental illness patient	0.103	-0.016	-0.001	0.057	0.039	0.044
Stopping smoking habit in the family	-0.246	-0.128	-0.348**	-0.413**	-0.277*	0.205
Coverage health insurance for family members	-0.176	-0.055	0.069	-0.074	-0.066	-0.048
Access for clean water	0.265	0.355**	0.253	0.180	0.320*	0.187
Healthy sanitary toilet	0.098	0.160	0.222	0.059	0.133	0.028

Note. PHN=Public health nurses. \*p<0.05; \*\*p<0.01.

A= Activities in public health centers; B= Nursing care for follow-up patient; C= Nursing care for family; D= Nursing care for special needs group in the community; E= Nursing care for community; F= Total score of PHN competency



Our finding indicated that the core competencies of coordinators of PHN program for activities in PHCs were correlated with safety birth delivery with midwifery, basic immunization for under-five children, and monitoring growth and development of under-five children. It is similar with a previous study that the overall level of competency of QCPC was most strongly associated with the duration of professional experience in rural areas (Bigbee et al., 2010). This situation shows that the majority of IPHNs work in rural areas, in which the major health problems are maternal and child health care (Susanto, 2018). Therefore, the IPHC competencies could be implemented for PHNs to perform their activities of PHN services in rural areas.

Meanwhile, the core competencies for nursing care for follow-up patients were correlated with safety birth delivery with midwifery, basic immunization for under-five children, monitoring growth and development of under-five children, management of tuberculosis patients, and access to clean water. This indicates that so far, the health services provided by the coordinators of PHN program have focused on completing Indonesia's national agenda in reducing maternal and child mortality (Ministry of Health of Republic Indonesia, 2016a), although several infectious diseases in Indonesia have yet to finish the program (Ministry of Health of Republic Indonesia 2018), and clean and healthy living behavior in Indonesia still low (Susanto et al., 2016). This is likely because the case finding and prevention of some infectious diseases have not been optimal (Susanti et al., 2018). Thus, the tools of competencies of IPHN should be sensitive to measure their activities for preventing communicable diseases.

Then, the core competencies for nursing care for family and nursing care for the community were correlated with safe birth delivery with midwifery and stopping smoking habits in the family. These results are relevant to the previous study that the core competencies model of PHN could predict the family planning program (Hewitt et al., 2014). However, some negative behavior, such as smoking, has begun to be identified as the cause of health problems (Susanto & Widayati, 2018). This indicates that coordinators of PHN program need to conduct regular and continuous home visits in providing nursing care services to reach the level of family independence in solving their health problems. The level of family independence is the main goal of providing family nursing care in facilitating the continuity of family functions (Ministry of Health of Republic Indonesia, 2006). Therefore, family empowerment needs to be carried out optimally by coordinators of PHN program to solve the health problems of fostered families.

Furthermore, the core competencies for nursing care for special needs groups in the community was only correlated with stopping smoking habits in the family. This result is similar with previous studies that chronic diseases and non-communicable diseases is a health problem in the rural area as a state of health transition related to smoking behavior (Low et al., 2015; Ng, 2006). However, smoking regulation needs appropriate bargaining through the government institutions, as previous research indicated that the competence of coordinators of PHN program is required for the management of policies and organizations (Polivka & Chaudry, 2015). Therefore, skills in negotiation and organizational planning need to be developed in PHN services.

## **5. Implication and limitation**

The IPHN competency instrument developed in this study can be used as a reference in measuring the performance of PHNs in Indonesia. The results of this pilot study could be used by the government, especially the health office, in developing the competencies of coordinators of PHN program in PHCs. This tool could also be used for evaluating the performance of the coordinators of PHN program in carrying out the HIP-FA. However, it can only estimate the tasks and obligations that must be performed at PHCs. In order to be able to measure more broadly, the competency standard of PHN in Indonesia needs to be developed again related to other dimensions by referring to the QCPC for PHN. Therefore, the achievement of IHP-FA can be accelerated in its completion.

This study has some limitations. First, PHN competencies developed in this study only used the IPHN competencies, so the results cannot be generalized. For this reason, further research can conduct explanatory and confirmatory factor analysis between IPHN competencies and QCPC for PHN. Second, the research is only conducted in one region in Indonesia; therefore, it needs to be conducted in a larger population in order to measure the achievement of IHP-FA.

## 6. Conclusion

The IPHN competencies contain valid, reliable, and psychometrically robust measures. However, some programs in IHP-FA could not be achieved with the five core competencies of IPHN, demonstrating the need for developing the IPHN competencies in the future. The IPHN competencies are very important to be a standard for achieving the 12 indicators of IHP-FA. Therefore, developing the PHN core competencies of IPHN should be standardized in the Indonesian setting. Subsequent research to focus more on confirmatory and explanatory factor analysis between the IPHN and QCPC for PHN is necessary; therefore, IPHN competences can measure PHN services in PHCs in achieving the IHP-FA.

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## Conflict of interest

The authors declared no conflict of interest in this study.

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**Appendix 1.** Coverage of 12 indicators of healthy Indonesia program with a family approach (HIP-FA)

PHN	12 indicators of healthy of Indonesia with family approach (%)											
	A	B	C	D	E	F	G	H	I	J	K	L
PHN 1	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
PHN 2	70.0	68.0	78.0	80.0	70.0	70.0	70.0	80.0	70.0	70.0	60.0	50.0
PHN 3	44.0	32.0	70.0	60.0	75.0	50.0	65.0	95.0	20.0	35.0	98.0	50.0
PHN 4	59.7	69.8	67.6	81.4	57.9	67.0	53.3	94.4	23.3	87.4	29.0	20.0
PHN 5	57.9	69.8	67.6	81.4	57.9	67.0	53.3	94.4	23.3	20.0	87.4	29.0
PHN 6	57.6	82.2	73.2	74.6	73.2	55.3	31.4	47.6	35.2	36.7	100	85.7
PHN 7	68.0	66.0	78.0	80.0	73.0	75.0	77.0	64.0	62.0	62.0	70,9	81.0
PHN 8	51.8	92.0	85.0	40.0	64.3	10.0	13.9	50.0	44.7	45.7	98.7	96.7
PHN 9	37.0	46.0	62.0	42.0	69.0	65.0	65.0	78.0	71.0	87.0	23.0	38.0
PHN 10	85.2	95.0	95.2	79.3	92.7	88.2	38.7	43.0	38.4	25.3	99.2	76.0
PHN 11	87.1	89.1	71.4	60.5	85.0	60.0	52.0	63.0	32.0	41.0	86.0	79.0
PHN 12	72.6	98.6	76.0	65.0	80.0	100	17.0	100	74.2	41.5	96.7	90.1
PHN 13	73.0	86.0	72.0	45.0	73.0	68.0	50.0	65.0	68.0	45.0	55.0	55.0
PHN 14	71.0	87.0	72.0	45.0	73.0	68.0	50.0	65.0	68.0	45.0	55.0	55.0
PHN 15	74.0	81.0	72.0	45.0	73.0	68.0	50.0	65.0	68.0	45.0	55.0	55.0
PHN 16	95.0	90.4	90.0	65.0	85.0	100	100	100	50.0	45.0	85.0	70.0
PHN 17	95.0	99.0	97.0	40.0	95.0	90.0	90.0	70.0	37.0	40.0	100	64.0
PHN 18	83.0	80.0	72.0	45.0	73.0	68.0	50.0	65.0	68.0	45.0	55.0	55.0
PHN 19	65.0	90.0	98.0	90.0	100	100	80.0	100	50.0	40.0	75.0	60.0
PHN 20	85.0	98.0	95.0	65.0	98.0	95.0	65.0	85.0	28.0	32.0	98.0	92.0
PHN 21	82.0	90.0	92.0	85.0	96.0	80.0	42.0	65.0	21.0	25.0	75.0	70.0
PHN 22	60.0	100	90.0	80.0	82.0	80.0	50.0	60.0	30.0	20.0	100	87.0
PHN 23	80.0	60.0	90.0	62.0	90.0	80.0	42.0	80.0	90.0	25.0	100	65.0
PHN 24	87.0	96.0	96.0	75.0	96.0	45.0	56.0	65.0	27.0	56.0	95.0	32.0

PHN	12 indicators of healthy of Indonesia with family approach (%)											
	A	B	C	D	E	F	G	H	I	J	K	L
PHN 25	82.0	86.0	72.0	71.0	76.0	74.0	57.0	92.0	31.0	21.0	87.0	75.0
PHN 26	92.0	62.0	85.0	90.0	100	20.0	40.0	1000	5.0	15.0	100	25.0
PHN 27	95.0	80.0	85.0	82.0	99.0	75.0	76.0	71.0	50.0	50.0	80.0	65.0
PHN 28	95.0	90.0	95.0	60.0	99.0	90.0	60.0	80.0	10.0	65.0	99.0	50.0
PHN 29	95.0	90.0	95.0	85.0	95.0	70.0	75.0	90.0	10.0	40.0	95.0	80.0
PHN 30	80.0	90.0	90.0	60.0	85.0	90.0	70.0	80.0	10.0	50.0	70.0	70.0
PHN 31	79.9	100	100	98.0	100	98.0	94.9	100	46.5	36.0	100	90.0
PHN 32	70.0	94.0	95.0	68.0	85.0	90.0	70.0	80.0	42.0	75.0	89.0	89.0
PHN 33	70.0	94.0	95.0	85.0	95.0	90.0	45.0	85.0	40.0	55.0	95.0	80.0
PHN 34	61.9	85.4	85.3	74.2	90.8	38.8	55.2	42.9	19.9	96.6	64.3	36.8
PHN 35	78.0	81.0	72.0	45.0	73.0	68.0	50.0	65.0	68.0	45.0	55.0	55.0
PHN 36	84.0	96.0	100	79.6	95.0	75.0	51.6	28.5	26.9	36.5	37.0	96.0
PHN 37	72.6	100	100	96.3	96.9	32.7	17.9	38.5	43.7	29.6	95.6	94.8
PHN 38	76.0	100	92.0	71.0	87.0	100	64.0	100	42.0	56.0	100	100
PHN 39	59.6	69.8	67.6	81.4	57.9	67.0	53.3	94.4	23.3	20.0	87.4	29.0
PHN 40	93.0	100	100	99.0	100	80.0	95.0	100	22.0	42.0	100	71.0
PHN 41	90.6	90.3	86.3	80.8	85.8	100	96.5	100	25.7	21.3	89.6	52.0
PHN 42	33.0	70.0	71.2	23.0	12.0	46.0	34.0	63.0	27.0	19.0	39.0	26.9
PHN 43	90.6	90.3	86.3	80.8	85.8	100	96.5	100	25.7	21.3	89.6	52.0
PHN 44	70.3	95.18	78.4	94.6	89.7	100	37.8	50.0	80.4	48.1	83.2	35.1
PHN 45	68.9	80.0	91.7	96.1	96.1	80.0	25.5	29.6	22.6	47.2	92.5	39.1
PHN 46	72.6	100	100	96.3	96.9	32.7	17.9	38.5	43.7	29.6	95.6	94.8
PHN 47	79.2	100	97.1	86.7	96.3	73.5	69.7	79.1	31.3	22.2	100	79.0
PHN 48	79.2	100	55.0	76.0	96.3	73.5	69.7	79.1	31.3	22.2	100	79.3
PHN 49	83.0	73.0	72.0	45.0	73.0	68.0	50.0	65.0	68.0	45.0	55.0	55.0

PHN	12 indicators of healthy of Indonesia with family approach (%)											
	A	B	C	D	E	F	G	H	I	J	K	L
PHN 50	90.0	85.0	90.0	90.0	90.0	99.0	75.0	90.0	20.0	85.0	90.0	85.0
PHN 51	90.0	85.0	90.0	85.0	90.0	95.0	95.0	75.0	25.0	75.0	99.0	90.0
PHN 52	60.0	85.0	80.0	40.0	90.0	80.0	40.0	60.0	10.0	65.0	60.0	60.0
PHN 53	93.7	100	98.9	87.8	100	91.4	60.4	77.8	48.7	34.9	99.9	94.8
PHN 54	36.0	65.0	47.0	38.0	40.0	50.0	20.0	67.0	30.0	60.0	40.0	70.0
PHN 55	71.0	63.0	72.0	45.0	73.0	68.0	50.0	65.0	68.0	45.0	55.0	55.0
Total	4736.5	4552.88	4495.7	3847	4531.6	4015	3124.5	4931	2196.84	2438	4388.65	3580.2
Average	86.1	82.8	81.7	69.9	82.4	73.0	56.8	89.6	39.9	44.3	79.8	65.1

*Note:* A=Family planning with contraceptive; B=Birth delivery with midwifery; C=Basic immunization for under five; D=Exclusive breastfeeding; E=Monitoring growth and development of under-five; F=Management of tuberculosis patient; G=Management of hypertension patient; H=Healthcare for mental illness patient; I=Stopping smoking habit in the family; J=Coverage health insurance for family members; K=Access to clean water; L=Healthy sanitary toilet.