



Digital Literacy Assessment Primary Health Centre Workers

2024



**Transform
Health
INDONESIA**

Acknowledgement

Transform Health Indonesia is a national coalition of 24 organizations working together to advocate for the critical role of digital technology and health data in advancing the progress of universal health coverage in Indonesia. Its role in supporting research and broader efforts to ensure a fully digitized and integrated primary healthcare system in Indonesia by 2030. Therefore, THI supported the development of a digital literacy assessment tool for Puskesmas staff in order to determine the readiness of Puskesmas in implementing digital-based primary health care.

This research report was compiled by Deddy Darmawan and Syarif Rachman Hasibuan. Transform Health Indonesia appreciates the valuable contributions made by Irma Yunita and Tri Resopimiatri from APKESMI. Transform Health Indonesia is further grateful to the team members for their input and discussions that helped inform the content of this report: Ede Surya Darmawan, Deddy Darmawan, Retno Ika Praesty, Febrina Nur Choirunisa.

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Their combined efforts and expertise have played a crucial role in driving progress and creating positive changes toward a more digitally empowered health workforce in Indonesia. We are truly grateful for their contributions and partnership in this important work.

Hopefully, this assessment tool and its findings and recommendations can contribute to improving the digital literacy of Puskesmas staff in Indonesia.



Executive Summary

Background: Indonesia, a Southeast Asian country with a population of over 270 million, has a complex healthcare system with public and private providers. Despite government investment, the country faces challenges in achieving universal healthcare coverage, such as a shortage of healthcare workers, limited access to services in rural areas, and low rural population awareness about health insurance benefits. Regional disparities in per capita healthcare resources also exist, with remote regions having fewer general practice doctors and nurses.

Over ten thousand primary health centres (Puskesmas) are the cornerstone of the healthcare system in Indonesia, providing preventive, promotive, and curative services to the community. However, the Puskesmas face challenges such as a shortage of trained healthcare personnel, particularly in rural areas, and a lack of resources and infrastructure. Some of these challenges can be mitigated with innovative financing and organizational overhaul in order to meet rising demand and address access and quality disparity primary healthcare services.

Digitalization is a crucial priority for Indonesia's healthcare system to achieve universal health coverage by 2030. It is expected to improve access to services, reduce costs, enhance patient safety, and improve health outcomes. Digitalization can help reduce health disparities and improve service delivery, particularly in underserved areas. The Digital Transformation Office under the Ministry of Health was established (when) on 8 March 2021 to develop and implement a digital transformation strategy for healthcare. However, a key policy gap is the lack of a systematic process for evaluating organizational e-readiness and identifying technical capacity gaps among healthcare personnel. The Government of Indonesia developed the Blueprint of Digital Health Transformation Strategy 2024 in December 2021, which aims to improve the healthcare system through the integration of national health data, user-based health technology, tech capacity development, and data-driven policymaking. To ensure the success of the Blueprint, it is essential to focus on tech-capacity development, providing healthcare personnel with training and support to effectively use digital health tools. A digital literacy assessment toolkit for primary health center workers is proposed as one solution that could support bridging the identified gap in the policy strategy. This study serves as a pilot for the toolkit and was conducted to ensure its validity and integrity when implemented on a larger scale by over ten thousand institutions in Indonesia

Method: This study uses a cross-sectional survey design to assess digital literacy among Puskesmas workers in Indonesia. The target population includes health

professionals in primary health centres who attended the national seminar that were estimated at 800 people. A simple random sampling method was used, with 214 respondents. The data collection instrument was an online questionnaire adapted from the Ministry of Communication and Information Technology's digital literacy module. The questionnaire asked respondents about their digital technology experiences and conditions.

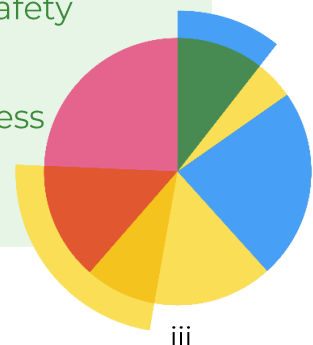
A normality test is used to determine data normality before analysis, allowing for more confident statistical techniques. The validity test is assessed using Pearson Correlation, calculating the correlation between each item and the total score. Items with a 0.05 significance level are considered valid, providing a reliable basis for analysing digital literacy levels among health workers. The reliability test was evaluated using Cronbach's Alpha, assessing internal consistency. The four pillars of digital literacy showed excellent internal consistency, with a Cronbach's Alpha value above 0.70 indicating good reliability.

Results: A total of 214 respondents, mostly females and males, were surveyed. Most were aged 41-50, with a small number in the 21-30 age group. Most had graduated education, with a majority of doctors and dentists. Respondents were distributed across 20 provinces, more than 50% working outside Java and Bali.

The majority of respondents reported stable workplace electricity supply, while a smaller percentage reported instability. Internet access was stable (74%), with 62% using devices individually, while 36% shared them. Regular updates of antivirus/malware software were reported by a half of respondents.

The digital literacy assessment covered four key pillars:

1. The **Digital Skill** pillar received a score index of **4.0**, reflecting strong digital capabilities among respondents.
2. The **Digital Ethic** pillar received a score index of **3.6**, showing a relatively good understanding of ethical behavior online.
3. The **Digital Safety** pillar had a score index of **3.5**, indicating that respondents generally have a good grasp of digital security practices, with a strong ability to set privacy settings (3.9) and create strong passwords (4.0). A quarter of respondents felt average or below in certain safety practices.
4. The **Digital Culture** pillar scored **4.0**, reflecting a strong awareness of cultural sensitivity in digital interactions.



3.8

The overall digital literacy score index across all pillars

reflecting a generally good level of digital competence among Indonesian health workers, though there are areas for targeted improvement, particularly in digital safety and ethics.

Younger respondents and midwives outperformed others in digital skills, while male respondents and those from Java and Bali showed slightly higher scores across all pillars.

Male respondents consistently outperformed females across all pillars, with higher overall index scores. Younger respondents, particularly those in the 21-30 and 31-40 age groups, exhibited stronger digital skills, achieving higher scores across nearly all pillars compared to older age groups, especially in digital skills where they scored 4.7 and 4.5, respectively. Respondents with graduated education (Bachelor and Diploma) tended to score higher than those with postgraduate degrees, particularly in digital skills and digital culture, both at 4.1. Midwives recorded the highest scores in digital skills and digital culture, both at 4.9, while respondents from Java and Bali showed higher scores compared to those from other regions, particularly in digital skills and digital culture, scoring 4.3 and 4.2, respectively.

Conclusion: The study assesses digital literacy among health professionals, focusing on digital skills, ethics, safety, and culture. The survey scores show strong competencies in digital skills and culture, while digital safety and ethics require more attention. The results can be used by policymakers and health institutions to design training programs for improving digital security and ethics, enhancing health service quality. Addressing gaps in digital security and ethics is expected to improve health outcomes.

Recommendations: The findings identify several recommendations to improve digital literacy among health professionals. These include ongoing training in basic digital skills, establishing standard operating procedures for social media, strengthening digital security knowledge, and promoting an inclusive digital culture. Regular assessments of digital literacy are also crucial for refining training programs. Additionally, the development of technology infrastructure in health facilities, including stable internet connections and updated hardware, is essential for digital information security. Finally, mentorship programs should be established for health professionals facing challenges in digital literacy.

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1. Introduction

1.1. Background

Indonesia is a country located in Southeast Asia and Oceania, with a population of over 270 million people (World Bank, 2021). The country has a complex healthcare system, with a combination of public and private healthcare providers (Ministry of Health Republic of Indonesia, 2019).

In recent years, the government has been increasing its investment in the healthcare sector (VietnamPlus, 2022). However, the country still faces several challenges in achieving universal healthcare coverage, including a shortage of healthcare workers, limited access to healthcare services in rural areas, and low levels of rural population awareness about the benefits of health insurance.

Indonesia reports regional disparities in terms of per capita healthcare resources. Remote, poor regions face severe healthcare human resource shortages. On average, remote regions have around 10 general practice doctors (GPs) in rural towns and around 20 practice doctors in provinces per 100,000 population, while non-remote regions have 84 GPs even in rural areas per 100,000 populations. Availability of nurses and midwives also show similar geographical disparities. Rural towns in poor regions have around 200 nurses and midwives for 100,000 populations, while populations in non-remote regions have nearly five times as many nurses and midwife resources (Wenang et al., 2021).

Despite the significant progress that has been made in the development of healthcare, rural areas still often suffer from inadequate healthcare facilities and trained personnel. This disparity has a major impact on the health and well-being of rural residents and leads to a widening health gap between urban and rural areas.

Primary health centre (PHC) or Puskesmas is the cornerstone of the healthcare system in Indonesia and is the first port of entry for individuals seeking healthcare services (World Health Organization, 2020). The provision of primary healthcare services is crucial for the overall health and well-being of the population, as it can prevent or manage minor health issues before they develop into more serious conditions (World Health Organization, 2020). The primary healthcare system in Indonesia is composed of a network of healthcare providers including hospitals, and community health centers (Puskesmas), which are staffed by general practitioners, nurses, and midwives (Ministry of Health, 2019). The Puskesmas are the first line of primary healthcare services and are responsible for providing a range of preventive, promotive, and curative services to the community (Ministry of Health, 2019).

Despite their importance, the Puskesmas face a number of challenges. One of the main obstacles to the effective functioning of the Puskesmas is a shortage of trained healthcare personnel, particularly in rural areas where the need for primary healthcare services is greatest. This has resulted in unequal access to healthcare services and has

hindered the ability of the Puskesmas to provide comprehensive care to the population (Ministry of Health, 2019).

Another significant challenge is lack of resources and infrastructure. Many Puskesmas are underfunded and lack the necessary equipment, supplies, and infrastructure to provide adequate care to patients (Ministry of Health, 2019). This has resulted in a shortage of essential medicines, diagnostic services, and other healthcare resources, and has hindered the ability of the Puskesmas to provide comprehensive care to the population. These challenges in the primary healthcare of Indonesia highlights the need for innovative financing and organizational overhaul to meet the rising and changing demand and address access and quality disparity (Deloitte, 2018). Despite efforts by the Indonesian government to improve the country's healthcare system, there are still numerous challenges that need to be addressed (Jahari, Wulandari, & Arifin, 2019).

Digital Health Transformation Strategy

In response to these challenges, digitalization is a key priority in Indonesia's efforts to achieve universal health coverage by 2030, as it is expected to improve access to healthcare services, reduce costs, enhance patient safety, and improve health outcomes (Ministry of Health Republic of Indonesia, 2020). Furthermore, digitalization is expected to reduce health disparities and improve healthcare service delivery, particularly in underserved areas of the country (Ministry of Health, 2021). Digitalization can help the Puskesmas by improving the efficiency of the service delivery process. For instance, the adoption of electronic health records (EHRs) can help reduce the time spent on record-keeping, which will allow healthcare workers to spend more time on patient care (Setiawan, 2021).

The Digital Transformation Office under the Ministry of Health has been established with the mandate of developing and implementing a digital transformation strategy for healthcare in the country (Ministry of Health, 2021). A key policy gap identified in the digital transformation strategy is lack of a defined, systematic process for evaluating organizational e-readiness in terms of operational and technological capabilities and identifying technical capacity gaps among healthcare personnel, which is critical in making informed investment decisions for capacity development in tandem with the digital transformation and universal healthcare objectives.

In December 2021, the Government of Indonesia developed a blueprint for digital health transformation, known as the Blueprint of Digital Health Transformation Strategy 2024 (Ministry of Health, 2021). The Blueprint aims to improve the healthcare system in Indonesia through the development and implementation of a digital transformation strategy.

The Blueprint provides a comprehensive framework for digital transformation in the healthcare system in Indonesia.

The Blueprint has the potential to improve the quality of care and to make healthcare more accessible and efficient for the Indonesian population through the integration of national health data, the development of user-based, patient-centric health technology, tech capacity development, and data-driven policymaking.



The Blueprint defines digitalization as the process of using digital technology and data to improve healthcare services and systems (Ministry of Health Republic of Indonesia, 2021). This includes the use of electronic health records, telemedicine, mobile health applications, health information systems, and digital health platforms, among other digital tools. According to the Blueprint, digitalization is not just about adopting technology, but also about transforming the entire healthcare system to be more patient-centered, efficient, and effective (Ministry of Health, 2021). It involves redesigning healthcare services, processes, and workflows to leverage digital tools and data for better health outcomes and patient experiences.

In order to ensure the success of the Blueprint, it is important to focus on tech-capacity development. This involves providing healthcare personnel with the training and support they need to effectively use digital health tools and to provide high-quality care to patients. This may include training on the use of electronic health records, telemedicine platforms, and other digital health tools (Ministry of Health, 2021).

At the primary health centre level, digital literacy among health workers is crucial for successful digital transformation. Digital literacy should be provided through professional training for health workers and as part of their core competency.

To assess the digital literacy of PHC workers objectively, a systematic evaluation of their abilities is necessary. This assessment will contribute to the development of practical digital transformation plans and help regulators make informed decisions on capacity building investments. This report, therefore, proposes a digital literacy assessment toolkit for the primary health centre workers to bridge the identified gap in the policy strategy.

1.2. Problem Statement

Although digital literacy is recognized as an essential skill for health professionals to deliver high-quality care, enhance operational efficiency, and ensure patient safety, the state of digital literacy among health professionals in Indonesia remains largely unknown. To date, no comprehensive national study has assessed the level of digital literacy among health professionals, nor has any specific instrument been developed to measure this form of literacy. Without a

clear understanding of digital literacy within this group, it is challenging to identify areas requiring improvement and to design effective interventions.

The Indonesian Ministry of Health has the Digital Maturity Index (DMI) to assess the digital maturity of organizations, including hospitals. The DMI focuses on institutional level such as technology, processes, human resource readiness, resources, and data standards. The digital literacy assessment conducted by Transform Health Indonesia (THI) focuses on the individual level, specifically the individual capabilities of health professionals in utilizing digital technology. Both initiatives share the common goal of enhancing digital technology use but differ in their focal points.

Therefore, a valid and reliable measurement instrument is needed to assess digital literacy among health professionals, to identify areas that require improvement, and to design effective interventions.

1.3. Scope of the Study

1.3.1. Term of Digital Literacy

Digital literacy refers to the ability to safely and appropriately access, manage, understand, integrate, communicate, evaluate, and create information using digital technology for work, decent employment, and entrepreneurship (UNESCO, 2018).

Health professionals must possess digital literacy because:

- (1) Digital literacy enables quick and accurate access to the latest medical information, which is essential for making informed decisions and improving patient care quality.
- (2) With the increasing adoption of electronic medical records (EMR) and health information systems, digital literacy helps health professionals adapt to and leverage these technologies to enhance efficiency and reduce medical errors.
- (3) Digital literacy facilitates effective communication with patients and colleagues through digital platforms, such as telemedicine and email, especially during the COVID-19 pandemic.
- (4) Digital literacy allows health professionals to continuously develop their skills and knowledge through online courses and other digital resources.
- (5) Digital literacy supports collaboration and research within the health community, enabling the easy sharing of data and information for innovation and scientific advancement.

Overall, digital literacy enhances individual competence and improves the responsiveness and adaptability of health systems to new challenges (WHO, 2016; Ministry of Health, 2021; Laksono et al., 2023).

In some countries, policies and best practices have been adopted to enhance digital literacy among health professionals. For instance, in the European Union, the "Digital Transformation Scoreboard 2018" report emphasizes the importance of digitalization.

and the integration of digital technologies in health services (European Commission, 2018). Meanwhile, in the United States, the Health Information Technology for Economic and Clinical Health (HITECH) Act promotes the use of health information technology through financial incentives.

In the digital era, many daily activities are conducted digitally, whether consciously or unconsciously. However, digital literacy has not been measured, and there are limited tools or instruments available to assess digital literacy among health professionals. Therefore, measuring and enhancing digital literacy in this group is crucial for improving service efficiency, effectiveness, and patient safety. The development of valid and reliable digital literacy measurement instruments is essential to support the digital transformation of health systems.

Digital literacy assessment refers to the framework in the Digital Literacy Road Map 2020-2024 (Ministry of Communication and Information, 2020). This framework is used as the basis for designing the program and curriculum of the Indonesia Digital Literacy National Movement Program 2020-2024.

Finding out the current level and map of digital literacy of health workers is one of the important information to design efforts to increase the capacity of health human resources in order to support digital health transformation in Indonesia.

There are four pillars that are part of the digital literacy curriculum development framework, namely Digital Skill, Digital Ethics, Digital Safety, and Digital Culture:

- 1. Digital Skill** is an individual's ability to know, understand, and use ICT hardware and software as well as digital operating systems in daily life.
- 2. Digital Ethics** is an individual's ability to realize, model, adapt, rationalize, consider, and develop digital ethics governance (netiquette) in daily life.
- 3. Digital Safety** is the user's ability to recognize, model, apply, analyze, consider and increase awareness of personal data protection and digital security in daily life.
- 4. Digital Culture** is the individual's ability to read, decipher, familiarize, examine, and build national insight, Pancasila values and Unity in Diversity in daily life and digitalization of culture through the use of ICT.

1.3.2. Objectives

The objective of this assessment is to measure digital literacy among primary health centre workers in Indonesia and to synthesize recommendations for improving the strategies of Digital Health Transformation, based on feedback from bureaucrats and the study findings.

1.3.3. Types of Data Collected

The data collected includes demographic information such as gender, age, highest education level, profession, work location, name of the primary health center, and employment status. The digital literacy questions cover digital skills, digital ethics, digital safety, and digital culture.

Additionally, the assessment gathers information on infrastructure conditions, including electricity and internet connectivity, the condition of computers/laptops, and data security software.

2. Method

2.1. Design

This assessment employs a quantitative research approach with a cross-sectional survey design to collect data on digital literacy among Puskesmas workers in Indonesia.

2.2. Population and Sample

The target population includes health professionals in primary health centres who attended the national seminar that were estimated at 800 people. A simple random sampling method was used, with 214 respondents. A simple random sampling method was used, ensuring that each individual in the population had an equal chance of being selected as a respondent. The total number of respondents was 227 health workers. After data cleaning, the final number of respondents was 214, as some respondents had submitted duplicate responses.

2.3. Data Collection Instrument

The instrument used in this survey was a questionnaire adapted from the digital literacy module of the Ministry of Communication and Information Technology, and it was administered using Google Forms. The questionnaire included questions related to demographic information, infrastructure conditions, and various aspects of digital literacy. Digital literacy is built on four pillars: (1) digital skill, (2) digital ethics, (3) digital safety, and (4) digital culture.

2.4. Data Collection Procedure

Data was collected through an online questionnaire distributed to respondents (link: <https://forms.gle/svtyECMdm5Rk86TYA>). Respondents were asked to complete the questionnaire based on their conditions and experiences in using digital technology at their workplace.

2.5. Normality Test

A normality test is a critical step to determine whether the data is normally distributed or not. This test is conducted before further analysis to ensure that the assumption of data normality is met. If the data is normally distributed, statistical techniques that require this assumption can be applied with greater confidence. Conversely, if the data is not normally distributed, the use of non-parametric techniques or data transformation should be considered before proceeding with the analysis.

Table 1. Normality Test

Digital Literacy Pillars	p-value
Digital Skill	<0,05
Digital Ethic	<0,05
Digital Safety	<0,05
Digital Culture	<0,05

In this digital literacy assessment, the Kolmogorov-Smirnov test, commonly used for larger samples, will be employed. This test compares the cumulative distribution of the sample data with a theoretical normal distribution.

Based on the results of the normality test using the Kolmogorov-Smirnov test on the four aspects of digital literacy - Digital Skill, Digital Ethic, Digital Safety, and Digital Culture - it was found that the p-value (Sig.) for all aspects was less than 0.05. This indicates that the distribution of scores for these four aspects does not follow a normal distribution. Since the survey data doesn't follow a typical pattern, we used the **median** (middle value) instead of the **mean** (average) for analysis. The median is better for this kind of data because it's not affected by extreme scores and gives a more accurate picture of the digital literacy levels. So, the analysis was based on this approach rather than assuming the data was "normal."

2.6. Validity Test

The validity of the instrument was tested using Pearson Correlation to assess the extent to which each item in the questionnaire measures the intended construct. The steps taken include:

- (1) Calculating the correlation between each item and the total score.
- (2) Using a two-tailed correlation with a significance level of 0.05 to determine the validity of each item.
- (3) Items that show significant correlation are considered valid and are included in the subsequent analysis.

These steps ensure that the questionnaire items effectively capture the intended constructs, providing a reliable basis for the analysis of digital literacy levels among health workers.

Digital Skill

All items within the digital skill pillar exhibit significant *Pearson Correlation* coefficient with the total score at a 0.05 significance level ($p < 0.05$). The correlations range from 0.79 to 0.91, indicating that all items have a strong relationship with the measured

digital skill construct. Consequently, all items within the digital skill pillar are considered valid.

Table 2. Pearson Correlation Test Results for the Digital Skill Pillar

Indicators	Pearson Correlation Coefficient	Validity
1. Internet Connectivity	0.87	Valid
2. File Download	0.89	Valid
3. File Upload	0.89	Valid
4. Data Access	0.91	Valid
5. Data Storage	0.91	Valid
6. Web Information Check	0.87	Valid
7. Information Comparison	0.85	Valid
8. Digital Interaction	0.90	Valid
9. Digital Shopping	0.79	Valid

Digital Ethic

All items within the digital ethic pillar exhibit significant Pearson correlations with the total score at a significance level of 0.05 ($p < 0.05$). The correlations range from 0.58 to 0.85, indicating that all items have a strong relationship with the digital ethics construct being measured. Therefore, all items within the digital ethic pillar are considered valid.

Table 3. Pearson Correlation Test Results for the Digital Ethic

Indicators	Pearson Correlation Coefficient	Validity
1. Do not upload photos	0.75	Valid
2. Do not tag without permission	0.74	Valid
3. Do not post harsh comments	0.76	Valid
4. Do not create groups without permission	0.58	Valid
5. Do not share information	0.85	Valid
6. Do not encourage negative comments	0.82	Valid
7. Do not share screenshots	0.85	Valid

Digital Safety

All items within the Digital Safety Pillar show a significant Pearson correlation with the total score at a 0.05 significance level ($p < 0.05$). The correlations range from 0.49 to 0.87, indicating that all items have a strong relationship with the measured construct of digital safety. Therefore, all items in the Digital Safety Pillar are considered valid.

Table 4. Pearson Correlation Test Results for the Digital Safety

Indicators	Pearson Correlation Coefficient	Validity
1. Manage privacy	0.74	Valid
2. Report abuse	0.81	Valid
3. Disable location	0.87	Valid
4. Do not upload personal data	0.49	Valid
5. Use antivirus	0.83	Valid
6. Distinguish spam emails	0.8	Valid
7. Create a secure password	0.73	Valid
8. Backup data	0.73	Valid

Digital Culture

All items in the digital culture pillar have significant Pearson correlations with the total score at a significance level of 0.05. The correlations range from 0.64 to 0.90, indicating that all items have a strong relationship with the digital culture construct being measured. Therefore, all items in the digital culture pillar are considered valid.

Table 5. Pearson Correlation Test Results for the Digital Culture

Indicators	Pearson Correlation Coefficient	Validity
1. Adjust communication	0.81	Valid
2. Consider other religions	0.85	Valid
3. Include author's name	0.72	Valid
4. Consider other ethnicities	0.9	Valid
5. Share cultural arts	0.8	Valid
6. Consider different political views	0.9	Valid
7. Consider cultural diversity	0.89	Valid
8. Search for information using keywords	0.64	Valid

2.7. Reliability Testing

The reliability of the instrument was assessed using Cronbach's Alpha to evaluate the internal consistency of the questionnaire. The steps involved were as follows:

- (1) Calculating the Cronbach's Alpha value for the entire questionnaire.
- (2) Considering the removal of items with low item-total correlations to improve reliability.
- (3) A Cronbach's Alpha value above 0.70 is considered to indicate good reliability.

The reliability testing results using the Cronbach's Alpha coefficient for the four pillars of digital literacy indicate that all pillars exhibit excellent internal consistency.

Table 6. Reliability Test Results

Digital Literacy Pillars	Cronbach Alpha
Digital Skill	0,96
Digital Ethic	0,88
Digital Safety	0,88
Digital Culture	0,93

Digital Skill has a Cronbach's Alpha value of 0.96, reflecting a very high level of internal consistency. This suggests that the items within this pillar are highly reliable and can be trusted to accurately measure the digital skills of health workers.

Digital Ethic and Digital Safety each have a Cronbach's Alpha value of 0.88, signifying good internal consistency. This indicates that the items within these two pillars are reliable and consistent in measuring digital ethics and safety among health workers.

Digital Culture has a Cronbach's Alpha value of 0.93, also indicating excellent internal consistency. This means that the items within this pillar are highly reliable in measuring the digital culture among health workers.

Overall, the four digital literacy pillars (Digital Skill, Digital Ethic, Digital Safety, and Digital Culture) demonstrate good to excellent internal consistency based on Cronbach's Alpha values. **This indicates that the instrument used to measure digital literacy among health workers in Indonesia is highly reliable and dependable.** None of the pillars suggest a need for item revision or deletion, as all alpha values exceed the accepted threshold for reliability.

2.8. Score Calculation

To measure the level of digital literacy in this assessment, each indicator within the digital literacy pillars (Digital Skill, Digital Ethic, Digital Safety, and Digital Culture) was assigned a score based on the respondents' answers. The score calculation was conducted to obtain an index reflecting the overall digital literacy capability.

2.8.1. Score Calculation Method

Each respondent was given a series of questions related to each digital literacy pillar. Each answer was assigned a value or score as follows:

1: very incapable

2: incapable

3: average

4: capable

5: very capable

The total score for each pillar is the sum of the scores obtained by the respondent for all indicators within that pillar. The maximum score is calculated by assuming that the respondent gives the highest possible answers (maximum value) for all indicators within that pillar.

2.8.2. Score Calculation Formula

After determining the total score and the maximum score, the index score is calculated using the following formula:

$$\text{Index Score} = \left(\frac{\text{Total Score Obtained}}{\text{Maximum Score}} \right) \times 5$$

Note:

Total Score Obtained: The sum of the values obtained by the respondent based on their answers.

Maximum Score: The highest possible sum of values if all answers were at the maximum level.

Multiplier of 5: Used to normalize the score within a range of 0 to 5.

3. Results

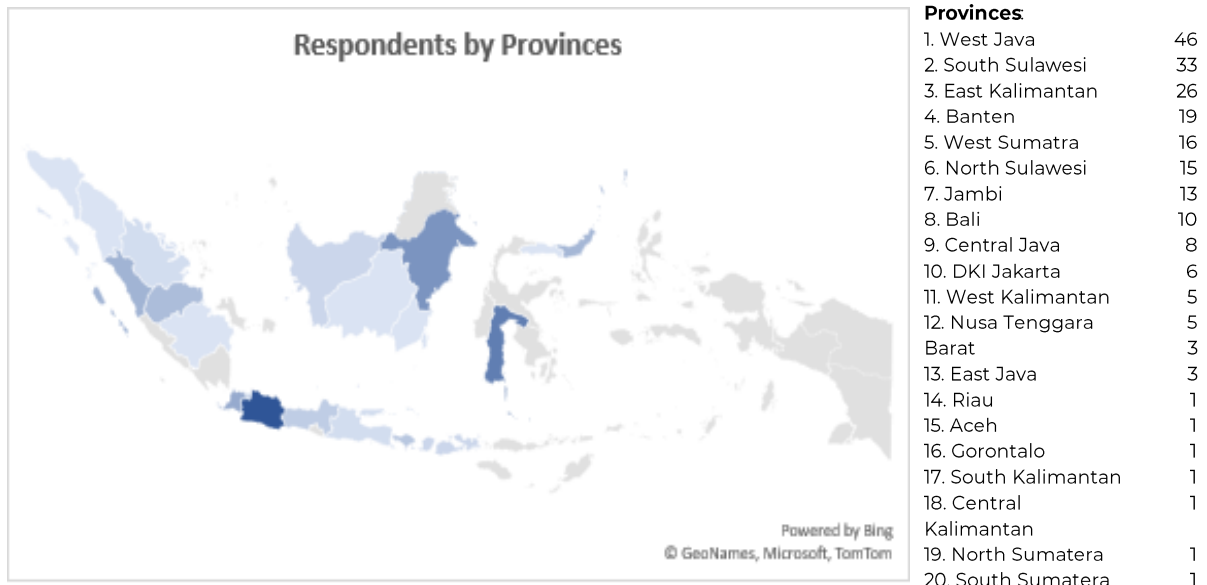
3.1. Respondent Characteristics

A total of 214 respondents participated, mostly females (80%) and males (20%). Close to half of the respondents were 41-50 years old (46.7%), followed by those over 51 years old (29.4%), and the 31-40 years old group (20.6%). Only a small number of respondents were in the 21-30 years old group (3.3%).

Table 7. Respondent Characteristic

Characteristic	Category	n	%
Sex	Male	43	20.1
	Female	171	79.9
Age	21-30 years old	7	3.3
	31-40 years old	44	20.6
	41-50 years old	100	46.7
	>51 years old	63	29.4
Education	Graduated (Bachelor and Diploma)	161	75.2
	Post Graduated	53	24.8
Health Profession	Doctor and Dentist	93	43.4
	Midwife	33	15.4
	Nurse	25	11.7
	Public Health and Others	63	29.4
Province	Java and Bali	91	42.5
	Outside Java and Bali	123	57.5
Employment Status	Civil Servant	205	95.8
	Government Contracted Employee	9	4.2

Most of the respondents held a graduated education (Bachelor and Diploma), with 161 individuals (75.2%), while those with a postgraduate education amounted to 53 individuals (24.8%). The largest health professional group was represented by doctors and dentists, totalling 93 individuals (43.4%), followed by 63 public health workers and others (29.4%), 33 midwives (15.4%), and 25 nurses (11.7%).



Respondents were working in 20 provinces, unevenly distributed. Thus, we grouped them into two regions, namely Java and Bali with a total of 91 respondents (42.5%), and Outside Java and Bali 123 respondents (57.5%). Most of the respondents were civil servants, with 205 individuals (95.8%), followed by the Government contracted employee with 9 individuals (4.2%).

3.2. Infrastructure and Facility Condition

The majority of respondents reported that the electricity supply at their workplace is stable, with 185 individuals (86.4%) stating so. However, 29 respondents (13.6%) reported instability in the electricity supply. Regarding internet access, 159 respondents (74.3%) indicated that the internet connection at their workplace is stable, while 55 respondents (25.7%) reported that the internet connection is unstable.

Table 8. Primary Health Center Infrastructure and Facility

Infrastructure	Condition	n	%
Electricity	Available and stable	185	86,4
	Available but not stable	29	13,6
Internet connection	Available and stable	159	74,3
	Available but not stable	55	25,7
Availability and condition of computers/ laptops for work	Available, individual use	132	61,7
	Available, sharing use	82	36,4
Data security software (antivirus/ malware) on computers/ laptops	Available, regularly updating	108	50,5
	Available, rare updating	106	49,5

In terms of the availability and condition of computers/laptops for supporting work, the majority of respondents (132 individuals or 61.7%) have devices used individually, while 82 respondents (36.4%) have to share computers/laptops with other staff. A total of 108 respondents (50.5%) reported that antivirus/malware software on their computers/laptops is regularly updated, whereas 106 respondents (49.5%) stated that the software is rarely updated.

3.3. Digital Literacy Overview

Below are the summarized findings for each pillar:

1. The **Digital Skill** pillar received a score index of **4.0**, reflecting strong digital capabilities among respondents. The highest scores were in connecting to the internet, downloading, and uploading files (4.2), while the lowest score was in online shopping (3.7). Despite most respondents feeling either capable (33.6%) or very capable (38.7%), a small portion reported being incapable (4.83%) or very incapable (1.45%) of performing digital tasks. Younger respondents (21-40 years) performed better, particularly in basic digital tasks.
2. The **Digital Ethic** pillar received a score index of **3.6**, showing a relatively good understanding of ethical behavior online. The highest score was related to refraining from posting rude comments (4.0), but there were gaps in respecting consent when creating groups, which had the lowest score (2.7). Although most respondents were proficient in maintaining digital ethics, about 15.7% reported being very incapable, highlighting areas for improvement in social media conduct.
3. The **Digital Safety** pillar had a score index of **3.5**, indicating that respondents generally have a good grasp of digital security practices, with a strong ability to set privacy settings (3.9) and create strong passwords (4.0). However, there were lower scores in not uploading personal data (2.7) and identifying spam emails (3.1), reflecting vulnerabilities in personal data protection and spam recognition. A quarter of respondents felt average or below in certain safety practices.
4. The **Digital Culture** pillar scored **4.0**, reflecting a strong awareness of cultural sensitivity in digital interactions. Respondents were particularly skilled at adjusting communication to consider different religions (4.3) and ethnicities (4.2), showing a good understanding of cultural diversity. However, there was room for improvement in sharing cultural heritage and citing original sources, both of which had scores around 3.7.

Table 9 reveals that the median scores for each digital literacy pillar vary. The variation in the minimum and maximum scores within each pillar suggests significant differences in digital literacy levels among respondents, with some individuals displaying lower capabilities compared to others.

Table 9 Summary of Digital Literacy Pillar Scores

Digital Literacy Pillars	Indicators	Median	Minimum	Maximum
Digital Skill	9	36	9	45
Digital Ethic	7	26	7	35
Digital Safety	8	28	8	40
Digital Culture	8	32	7	40

3.3.1. Digital Skill

The digital skill pillar consists of nine indicators, with the majority of respondents feeling capable (33.59%) and very capable (38.73%) in basic digital skills such as connecting devices to the internet, downloading, and uploading files. Only a small proportion of respondents reported feeling very incapable (1.45%) or incapable (4.83%) in this pillar. The highest percentage of responses in the "very capable" category was observed in the ability to connect devices to the internet and upload files.

Table 10. Frequency Distribution of Digital Skills

Indicators of Digital Skills	Very Incapable (Score 1)	Incapable (Score 2)	Average (Score 3)	Capable (Score 4)	Very Capable (Score 5)
1. Connect to the internet	3	10	30	66	105
2. Download files	2	10	35	65	102
3. Upload files	3	7	38	62	104
4. Access data	3	8	37	78	88
5. Store data	3	10	50	72	79
6. Check website information	4	12	50	80	68
7. Compare information	3	9	48	83	71
8. Digital interaction	2	12	55	73	72
9. Online shopping	5	15	69	68	57
Total	28	93	412	647	746
	1,45%	4,83%	21,39%	33,59%	38,73%

3.3.2. Digital Ethic

The assessment of the digital ethic aspect comprises 7 indicators. The majority of respondents feel capable (22.03%) and very capable (36.38%) of maintaining digital ethics, particularly in refraining from posting unacceptable comments in response to negative feedback, where 70.9% of respondents felt either capable or very capable. However, there are concerns as approximately 15.69% of respondents reported feeling very incapable of maintaining digital ethics, especially regarding creating groups without permission and immediately sharing information about accidents.

Table 11. Frequency Distribution of Digital Ethic

Indicators of Digital Skills	Very Incapable (Score 1)	Incapable (Score 2)	Average (Score 3)	Capable (Score 4)	Very Capable (Score 5)
1. Do not upload photos of others	22	20	64	49	59
2. Do not tag without permission	20	28	61	47	58
3. Do not post rude comments	20	12	20	56	106
4. Do not create groups without permission	73	29	41	39	32
5. Do not share information irresponsibly	34	16	37	45	82
6. Do not encourage negative comments	37	8	16	44	109
7. Do not share screenshots	29	13	23	50	99
Total	235	126	262	330	545
	15,69%	8,41%	17,49%	22,03%	36,38%

3.3.3. Digital Safety

Digital safety is evaluated with 8 indicators. Most respondents feel capable (24.07%) and very capable (27.69%) in aspects of digital safety, such as setting privacy settings on social media and using antivirus applications. However, concerns remain as about 21.2% of respondents feel average or less capable of distinguishing emails that contain spam/viruses/malware and performing data backups. The highest percentage of "very capable" responses is related to the ability to manage social media privacy settings.

Table 12. Frequency Distribution of Digital Safety

Indicators of Digital Skills	Very Incapable (Score 1)	Incapable (Score 2)	Average (Score 3)	Capable (Score 4)	Very Capable (Score 5)
1. Set privacy settings	12	14	34	67	87
2. Report misuse	18	18	62	49	67
3. Disable location services	16	20	56	55	67
4. Do not upload personal data	55	43	53	30	33
5. Use antivirus software	18	34	63	51	48
6. Identify spam emails	20	42	76	44	32
7. Create strong passwords	6	16	44	63	85
8. Backup data	12	19	75	53	55
Total	157	206	463	412	474
	9,17%	12,03%	27,04%	24,07%	27,69%

3.3.4. Digital Culture

Digital culture consists of 8 indicators. The digital culture pillar shows that the majority of respondents feel capable (32.48%) and very capable (40.13%) of considering cultural diversity and adjusting communication to avoid offending others. A small portion of respondents feel very incapable (2.63%) or incapable (4.26%) in this aspect, particularly in areas related to citing the original author when reposting and considering the feelings of readers from different ethnic or religious backgrounds.

Table 13. Frequency Distribution of Digital Culture

Indicators of Digital Skills	Very Incapable (Score 1)	Incapable (Score 2)	Average (Score 3)	Capable (Score 4)	Very Capable (Score 5)
1. Adjust communication style	3	4	30	85	92
2. Consider other religions	3	4	29	75	103
3. Cite the original author	10	16	56	64	68
4. Consider other ethnicities	3	5	38	67	101
5. Share cultural heritage	5	23	68	58	60
6. Consider different political views	5	8	42	73	86
7. Be aware of cultural diversity	4	5	39	70	96
8. Search information using keywords	12	8	49	64	81
Total	45	73	351	556	687
	2,63%	4,26%	20,50%	32,48%	40,13%

3.4. Digital Literacy Score Index

3.4.1. Digital Literacy Score Index

Table 14 presents the calculation of the digital literacy score index based on four pillars: Digital Skill, Digital Ethic, Digital Safety, and Digital Culture. The score index is calculated using a simple formula, dividing the total score obtained by the maximum score possible, and then multiplying the result by 5 to normalize the score within a range of 1 to 5.

Table 14. Overall Score Index of Digital Literacy

Pillars	Score index (1-5)
Digital Skill	4,0
Digital Ethic	3,6
Digital Safety	3,5
Digital Culture	4,0
Digital Literacy	3,8

Digital Skill pillar has a score index of 4, indicating that respondents generally have good digital skills, including the ability to effectively access and use digital technology. Digital Ethic pillar has a score index of 3.6, suggesting that while most respondents have a relatively good understanding of digital ethics, there is still room for improvement, particularly in adhering to norms and ethics in digital interactions. The Digital Safety pillar has a score index of 3.5, reflecting that awareness and practices related to digital safety among respondents are adequate, but there remains a need to enhance security measures and protections in the digital realm. Digital Culture pillar also has a score index of 4, indicating that respondents have a good understanding of digital culture, including the ability to interact and appreciate diversity in the digital context.

Table 15. Score Index of Digital Literacy by Indicators

Pillars	Indicators	Score Index (1-5)
Digital Skill	1. Connect to the internet	4,2
	2. Download files	4,2
	3. Upload files	4,2
	4. Access data	4,1
	5. Store data	4,0
	6. Check website information	3,9
	7. Compare information	4,0
	8. Digital interaction	3,9
	9. Online shopping	3,7
Digital Ethic	1. Do not upload photos of others	3,5
	2. Do not tag without permission	3,4
	3. Do not post rude comments	4,0
	4. Do not create groups without permission	2,7
	5. Do not share information irresponsibly	3,6
	6. Do not encourage negative comments	3,8
	7. Do not share screenshots	3,8
Digital Safety	1. Set privacy settings	3,9
	2. Report misuse	3,6
	3. Disable location services	3,6
	4. Do not upload personal data	2,7
	5. Use antivirus software	3,4
	6. Identify spam emails	3,1
	7. Create strong passwords	4,0
	8. Backup data	3,6
Digital Culture	1. Adjust communication style	4,2
	2. Consider other religions	4,3

Pillars	Indicators	Score Index (1-5)
	3. Cite the original author	3,8
	4. Consider other ethnicities	4,2
	5. Share cultural heritage	3,7
	6. Consider different political views	4,1
	7. Be aware of cultural diversity	4,2
	8. Search information using keywords	3,9

Table 15 presents the digital literacy score index calculated based on various indicators across four main pillars.

Digital Skill: Respondents demonstrated fairly strong capabilities, with the highest scores of 4.2 for indicators such as connecting to the internet, downloading files, and uploading files. The lowest score in this pillar was for the indicator related to online shopping, which received a score of 3.7.

Digital Ethic: Respondents showed relatively good adherence to digital ethics, particularly in avoiding harsh comments, which achieved a score of 4.0. However, the lowest score was observed in the indicator for not creating groups without permission, with a value of 2.7, indicating that awareness of the importance of consent in social media usage needs improvement.

Digital Safety: It reflects a reasonably good awareness of privacy settings and creating secure passwords, both receiving scores of 3.9. However, the lowest score of 2.7 was recorded for the indicator of not uploading personal data, suggesting potential risks in respondents' data security practices.

Digital Culture: Respondents scored quite high in adjusting communication and considering religious and cultural diversity, with the highest score of 4.3 on the indicator for considering other religions. Nevertheless, there is room for improvement in the indicator related to sharing cultural arts, which had a score of 3.7.

3.4.2. Score Index of Digital Literacy by Respondent Characteristic

Based on the analysis of digital literacy index scores on Table 16, male respondents consistently outperformed females across all pillars, with higher overall index scores.

Younger respondents, particularly those in the 21-30 and 31-40 age groups, exhibited stronger digital skills, achieving higher scores across nearly all pillars compared to older age groups, especially in digital skills where they scored 4.7 and 4.5, respectively.

Respondents with graduated education (Bachelor and Diploma) tended to score higher than those with postgraduate degrees, particularly in digital skills and digital culture, both at 4.1.

Midwives recorded the highest scores in digital skills and digital culture, both at 4.9, while respondents from Java and Bali showed higher scores compared to those from other regions, particularly in digital skills and digital culture, scoring 4.3 and 4.2, respectively.



Table 16. Score Index of Digital Literacy by Respondent Characteristic

Characteristic	Digital Literacy	Digital Skill	Digital Ethic	Digital Safety	Digital Culture
<u>Sex</u>					
Male	4,0	4,2	3,8	3,8	4,1
Female	3,7	4,0	3,5	3,4	4,0
<u>Age Group</u>					
21-30 years old	4,1	4,7	3,7	3,8	4,3
31-40 years old	4,2	4,5	4,0	3,9	4,3
41-50 years old	3,8	4,1	3,6	3,5	4,1
>51 years old	3,4	3,5	3,2	3,1	3,8
<u>Last Education</u>					
Graduated	3,9	4,1	3,6	3,5	4,1
Post Graduated	3,6	3,8	3,5	3,3	3,8
<u>Profession</u>					
Doctor and Dentist	4,0	4,3	3,8	3,7	4,2
Midwife	2,8	2,9	2,7	2,6	3,0
Nurse	4,5	4,9	4,0	4,2	4,9
Public Health and Others	3,7	3,9	3,5	3,4	3,9
<u>Province</u>					
Java & Bali	4,0	4,3	3,7	3,7	4,2
Outside Java & Bali	3,7	3,9	3,4	3,4	3,9

4. Conclusion And Recommendation

4.1. Conclusion

This study evaluated the digital literacy levels among health professionals, focusing on four key pillars: digital skills, ethics, safety, and culture. The overall index score from the survey is 3.8 out of a maximum of 5. The detailed index scores show that digital skills and culture have the highest index scores, both at 4.0, indicating that respondents possess strong competencies in digital skills and digital culture. In contrast, the pillars of digital safety and ethics scored lower, at 3.5 and 3.6 respectively, highlighting areas that require greater attention regarding digital security and ethics.

Digital skills can be improved through training related to health information systems that include micro planning, recording and reporting at the PHC. Digital security can be improved through training on data security, as well as the creation and enforcement of SOPs that ensure the security of data managed by PHCs. Digital ethics and culture are improved through a conducive environment that considers ethics and culture in the use of digital technology.

Overall, this study underscores the need for further improvements in the aspects of digital security and ethics among health professionals. While their skills and cultural understanding in the digital realm are relatively strong, the challenges in other aspects indicate room for improvement. Addressing these gaps through appropriate training and policies is expected to enable health professionals to more effectively leverage digital technology in their practice, ultimately improving health outcomes for the community.

4.2. Recommendation

This survey enriches the literature on digital literacy among health professionals, particularly within the context of the different pillars. Practically, these results can be utilized by policymakers and health institutions to design training programs focused on improving digital security and ethics, which in turn can enhance the quality of health services provided.

Based on the findings of this survey, several recommendations are proposed to enhance the digital literacy of health professionals.



1. Expand Continuous Digital Skills Training Programs



- **Policy Recommendation:** Introduce mandatory and ongoing digital skills training tailored to the specific needs of health workers. Focus areas should include basic digital skills such as connecting devices to the internet, and data access and storage, as identified in the survey. Special emphasis should be placed on improving capabilities in areas where respondents reported lower proficiency, like data interaction.
- **Financing Recommendation:** Allocate budget for creating online and in-person training modules, particularly in underserved regions. Partner with digital literacy providers and leverage public-private partnerships to reduce costs and improve access.

2. Establish Standard Operating Procedures (SOPs) for Responsible Social Media and Digital Ethics



- **Policy Recommendation:** Develop clear SOPs governing the use of social media and online communication in alignment with the digital ethics pillar. These should address issues like refraining from adding individuals to group chats without permission, avoiding sharing information irresponsibly, and ensuring privacy and consent in online interactions. Health facilities must enforce these guidelines to standardize ethical digital practices.
- **Financing Recommendation:** Fund the development and distribution of educational materials and workshops on digital ethics. This can be done through collaborations with digital governance organizations and IT experts to create low-cost materials, as well as through government subsidies to ensure widespread implementation.

3. Strengthen Digital Security Awareness and Practices



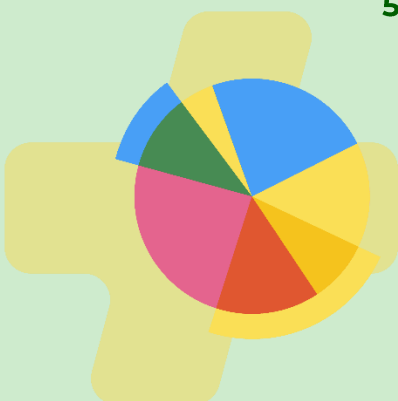
- **Policy Recommendation:** Enhance digital safety education through targeted training on topics such as distinguishing phishing emails and malware, using antivirus applications, and implementing best practices for creating strong passwords. Health facilities should make it mandatory for staff to undergo regular cybersecurity training.
- **Financing Recommendation:** Secure funding to procure cybersecurity training software and materials, including simulations and exercises that mimic real-life threats. Invest in health information systems that regularly update antivirus software and ensure reliable backup solutions.

4. Upgrade Digital Infrastructure in Health Facilities



- **Policy Recommendation:** Ensure health facilities are equipped with stable internet connections, modern computers, and up-to-date hardware to support digital literacy. Regular updates of antivirus and malware protection software should be mandated, with facilities required to report compliance.

5. Conduct Regular Digital Literacy Assessments



- **Policy Recommendation:** Implement annual digital literacy assessments to monitor progress and adjust training programs. Use data-driven insights to identify emerging gaps and target ongoing training and funding accordingly.
- **Financing Recommendation:** Increase the budget allocation for digital health, including workforce literacy, at the national and regional levels.
- **Financing Recommendation:** Allocate public funds to upgrade health facility infrastructure, particularly in rural areas. Prioritize facilities with the highest demand

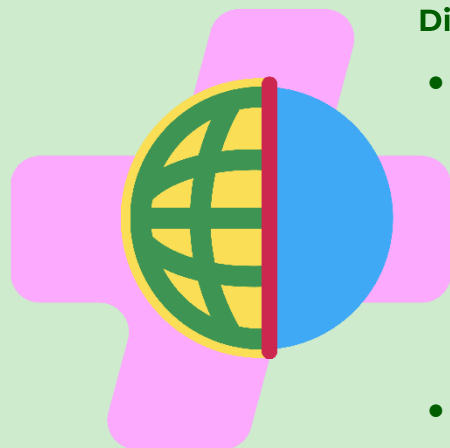
for hardware upgrades, such as those outside of Java and Bali, and secure funds for recurring expenses such as software licensing and IT support.

6. Establish Mentorship Program for Digital Literacy



- **Policy Recommendation:** Develop mentorship programs for health professionals who face ongoing challenges in digital literacy. These programs should pair skilled professionals with those requiring additional support and create peer-learning opportunities to foster a collaborative learning environment.
- **Financing Recommendation:** Designate financial resources for mentorship programs, covering the costs of training materials, mentoring sessions, and peer-to-peer learning platforms. Collaborate with academic institutions and digital learning platforms to reduce program costs, while seeking international funding to support ongoing mentorship efforts.

7. Promote an Inclusive Digital Culture that Respects Diversity



- **Policy Recommendation:** Prioritize the promotion of digital culture that fosters inclusivity, cultural sensitivity, and respect for diversity. Training should focus on adjusting communication styles, considering diverse religious, ethnic, and cultural backgrounds, and raising awareness on ethical reposting and proper citation of digital content.
- **Financing Recommendation:** Support these initiatives through national campaigns and grants aimed at creating inclusive digital communities. Digital culture training that can be integrated into broader health worker education.

4.3 Routinizing the Digital Literacy Assessment - way forward

To ensure the continuous improvement of digital literacy among Indonesia's health workforce, this tool could be routinized and taken forward annually by the Ministry of Health and its training partners, through:

1. Integrating Digital Literacy Assessments into Routine Health Workforce Evaluations

- Embed the digital literacy assessment tool into the regular performance evaluations of health workers at all levels. This can be done alongside existing professional development assessments to streamline the process and ensure health workers' digital capabilities are monitored regularly (e.g., annually).
- Align assessments with health facility accreditation requirements or ongoing competency assessments, making digital skills a key component of overall health workforce evaluation.

2. Creating a Platform for Digital Literacy Monitoring

- Establish a centralized, digital platform where data from digital literacy assessments can be uploaded, analyzed, and tracked over time. The platform should allow health authorities to monitor progress and identify facilities or regions requiring additional support

3. Leveraging Digital Literacy Data for Decision-making

- Use the data collected from routine assessments to inform ongoing policy development and training programs. By identifying trends and gaps in digital literacy, health authorities can prioritize investments in digital skills training and infrastructure.
- Implement a feedback loop where the findings from assessments are used to improve digital health training curricula, ensuring they are responsive to evolving digital needs.

4. Securing Funding and Partnerships to Sustain Routine Assessments

- Establish sustainable funding to support the routine administration of the digital literacy assessment tool. This may include partnerships with international organizations, donors, or private sector stakeholders invested in digital health capacity-building.
- Advocate for the inclusion of digital literacy assessment funding in the national health budget, emphasizing its importance in driving Indonesia's digital health transformation.

4.4 Transform Health Indonesia Coalition - way forward

Transform Health Indonesia Coalition can support the Government of Indonesia to advance this.

1. Leadership in Policy Advocacy and Digital Literacy Promotion

Transform Health Indonesia can play a pivotal role in advocating for policies and regulations that prioritize the enhancement of digital literacy among health professionals. The coalition will:

- Work closely with governmental health authorities and policy makers like APKESMI (PHC association) and ADINKES (Health Offices association), THI will advocate MOH (DG of Health Workforce, DG of Public Health, DG of Health Services, Bureau of Planning, Center for International Cooperation), Indonesia Health Council, MOHA (DG of Regional Development), to push for national digital literacy standards in the healthcare sector.
- Facilitate discussions with stakeholders in health and technology sectors to develop guidelines that align digital skills training with national health goals, including Indonesia's push towards digital health transformation.
- Engage with international partners, including WHO, to ensure that Indonesia's digital health policies align with global standards and best practices.

2. Support in the Development and Delivery of Digital Literacy Training

Given the coalition's multi-stakeholder approach, Transform Health Indonesia is uniquely positioned to support the creation and dissemination of comprehensive digital literacy training programs. The coalition will:

- Collaborate with educational institutions and medical associations partners to design a customized curriculum that addresses the specific gaps identified by the survey (e.g., responsible social media use, data security).
- Mobilise resources and trainers in collaboration with Indonesian Health Council to conduct workshops, webinars, and hands-on training sessions, particularly targeting remote or under-resourced areas where health professionals may have limited access to such initiatives.
- Secure sustainable funding to routinize and institutionalize the digital literacy assessment.

3. Creating a Mentorship Program for Digital Literacy

Transform Health Indonesia can spearhead the creation of mentorship programs aimed at providing continuous support to health professionals struggling with digital literacy. This can be achieved by:

- Establishing a network of digitally proficient health professionals who can serve as mentors to their peers, offering one-on-one guidance and support.
- Collaborating with local health departments to identify professionals who would benefit most from such mentorship and connecting them with suitable mentors.
- Setting up a digital platform where mentors and mentees can interact, share resources, and track progress, ensuring the initiative is sustainable and widely accessible.

4. Advancing an Inclusive Digital Culture

Finally, Transform Health Indonesia should advocate for an inclusive digital culture that respects diversity and ensures equitable access to digital resources by:

- Promoting diversity and inclusivity in all training and mentorship programs, ensuring that health professionals from all backgrounds, genders, and regions are represented.
- Working with advocacy groups to address digital divides, such as access issues for healthcare workers in remote or underserved areas, and developing tailored programs to meet their unique needs.
- Supporting awareness campaigns (e.g., MyDataOurHealth and Digital Health Week) that highlight the importance of respect for diverse cultures, languages, and experiences in digital spaces within the healthcare sector.

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Appendixes

Appendix 1. Pillars and Indicators for the Digital Literacy Assessment

Appendix 2. Questionnaire - Digital Literacy Assessment for Primary Health Centre Workers

Appendix 1. Tool

Pillars and Indicator for the Digital Literacy Assessment (Ministry of Communication and Information)	
Pillars	Indicators
Digital Skill	<p>Able to connect the device to the internet network</p> <p>Able to download files/applications</p> <p>Able to upload files</p> <p>Able to search and access data, information and content in digital media.</p> <p>Able to store data, information, and content in digital media</p> <p>Used to find out whether the information I find on websites is true or false.</p> <p>Used to compare different sources of information to decide if the information is correct</p> <p>Able to interact through various digital technology communication devices.</p> <p>Used to shopping through marketplaces.</p>
Digital Ethic	<p>Not uploading photos with other people's children</p> <p>Not tagging friends when uploading content without the need to notify my friend</p> <p>Will not comment rudely if someone makes a negative comment on my upload.</p> <p>Not creating groups and adding people without permission</p> <p>Will not directly share accident information</p> <p>Will not invite people to make negative comments.</p> <p>Will not share screenshots of the conversation to social media</p>
Digital Safety	<p>On social media accounts, being able to manage who can view my timeline</p> <p>Know how to report abuse on social networks.</p> <p>Able to disable the option to show geographical position.</p> <p>Not uploading personal data on social media.</p> <p>Using apps to find and remove viruses on my device</p> <p>Able to distinguish emails that contain spam/virus/malware.</p> <p>Used to create a secure password with a combination of numbers, letters, and punctuation marks.</p> <p>Able to back up data in several places.</p>
Digital Culture	<p>Able to adjust the way of communicating so that the other party does not feel offended.</p> <p>Consider the feelings of readers from other religions.</p> <p>Include the author's name when reposting</p> <p>Consider the feelings of readers who are from other ethnicities.</p> <p>Share Indonesian traditional and contemporary cultural arts digitally</p>

Pillars and Indicator for the Digital Literacy Assessment (Ministry of Communication and Information)

Pillars	Indicators
	Consider the feelings of readers who have different political views. Always consider and be aware of cultural diversity on social media when sharing messages.

Appendix 2. Questionnaire

QUESTIONNAIRE

Digital Health Literacy Assessment for Primary Health Centre Workers

Akselerasi Puskesmas Seluruh Indonesia (APKESMI) and **Ikatan Ahli Kesehatan Masyarakat Indonesia (IAKMI)** supported by **Transform Health Indonesia (THI)** conducted a Digital Health Literacy Assessment for Primary Health Centre (Puskesmas) Workers. This assessment aims to determine the level of digital health literacy and readiness of health workers at Puskesmas. This questionnaire is filled in independently and individually by officers working at Puskesmas.

Please take the time to complete this questionnaire so that the data and information collected can provide input and recommendations for improving the digital health literacy of health workers at Puskesmas.

All information obtained will only be used for research purposes, and will be guaranteed confidentiality, and will not affect the assessment, or position in your work.

Thank you for your willingness and participation.

Best regards,

APKESMI, IAKMI & THI

I. RESPONDENT IDENTITY

Name: _____

Phone number: _____

Gender:

- Male
- Women

Age

- Under 20 years old
- 21 – 30 years
- 31 – 40 years
- 41 – 50 years
- Above 51 years old

Your work profession (choose one):

- Doctor
- Dentist

- Midwife
- Nurse
- Community health workers
- Pharmacist
- Sanitary worker
- Nutritionist
- Laboratory staff
- Administration and finance staff
- IT staff
- Other:

Province:

- | | |
|----------------------------|----------------------|
| • Nanggroe Aceh Darussalam | • DKI Jakarta |
| • North Sumatera | • West Jawa |
| • South Sumatera | • Central Jawa |
| • West Sumatera | • DI Yogyakarta |
| • Bengkulu | • East Jawa |
| • Riau | • Bali |
| • Riau Islands | • NTT |
| • Jambi | • NTB |
| • Lampung | • Gorontalo |
| • Bangka Belitung | • West Sulawesi |
| • West Kalimantan | • Central Sulawesi |
| • South Kalimantan | • North Sulawesi |
| • Timur Kalimantan | • Southeast Sulawesi |
| • Central Kalimantan | • South Sulawesi |
| • North Kalimantan | • North Maluku |
| • Banten | • Maluku |

District/city where you work: _____

Name of PHC where you work: _____

Employment status (choose one):

- ASN (State Civil Servants)
- PPPK (Government Employee with Work Agreement)
- Contract/Honorary Employee
- Other: _____

II. INFRASTRUCTURE AND FACILITY

The electricity network and supply at your workplace (choose one):

- Available and stable
- Available, but often off
- Available, but limited in time
- Not available
- Other: _____

Internet network at your workplace (choose one):

- Available and stable
- Available, but often off
- Available, but limited in time
- Not available
- Other: _____

Number and condition of computers/laptops to support your work (choose one):

- Available, used individually
- Available, and shared with other staff
- Available, but broken
- Not available
- Other: _____

Software for data security protection (antivirus/malware) on computer/laptop (choose one):

- Available and always updated

- Available, rarely updated
- Not available

III. DIGITAL LITERACY

3.1. DIGITAL SKILL

Digital skills are the ability of individuals to know, understand, and use ICT hardware and software as well as digital operating systems in daily life.

No	Digital Skills Indicator	Very Incapable	Incapable	Between Capable and Incapable	Capable	Very Capable
1	Are you able to connect your device (computer/laptop/HP) to the internet?					
2	Are you able to download files/applications?					
3	Are you able to upload files?					
4	You are able to search and access data, information and content in digital media?					
5	Do you have the ability to store data, information and content in digital media?					
6	Are you used to finding out whether the information you find on a website is true or false?					
7	You are used to comparing different sources of information to decide if the information is correct?					
8	Are you able to interact through various digital technology communication devices?					
9	Are you used to shopping through marketplaces?					

3.2. DIGITAL ETHICS

Digital Ethics is an individual's ability to realise, model, adapt, rationalise, consider and develop digital ethics governance (netiquette) in daily life.

No	Digital Ethics Indicator	Very Incapable	Incapable	Between Capable and Incapable	Capable	Very Capable
1	You don't upload photos with other people's children?					
2	You don't tag your friends when you upload content without letting them know?					
3	You don't make rude comments if someone makes a negative comment on your post?					
4	Have you ever created a group and added people without permission?					
5	You wouldn't share accident information right away?					
6	You will not invite people to comment negatively?					
7	You will not share screenshots of conversations to social media?					

3.3. DIGITAL SAFETY

Digital Safety is the ability of users to recognise, plan, apply, analyse, consider and increase awareness of personal data protection and digital security in daily life.

No	Digital Safety Indicator	Very Incapable	Incapable	Between Capable and Incapable	Capable	Very Capable
1	On your social media accounts, can you control who can see your timeline?					
2	Do you know how to report abuse on social networks?					
3	You can deactivate the option to show your geographical position?					
4	You upload personal data on social media?					
5	You use apps to find and remove viruses on your device?					

6	You can distinguish between spam/virus/malware e-mails?					
7	Are you used to creating secure passwords with a combination of numbers, letters and punctuation marks?					
8	Do you back up your data in several places?					

3.4. DIGITAL CULTURE

Digital Culture is an individual's ability to read, decipher, familiarise, examine, and build national insight, Pancasila values and Unity in Diversity in daily life and digitalisation of culture through the use of ICT.

No	Digital Culture Indicator	Very Incapable	Incapable	Between Capable and Incapable	Capable	Very Capable
1	Did you adjust the way you communicated so that the other party would not feel offended?					
2	You consider the feelings of readers from other religions?					
3	Do you include the author's name when reposting?					
4	You consider the feelings of readers from other ethnic groups?					
5	You share traditional and contemporary Indonesian art and culture digitally?					
6	You consider the feelings of readers who have different political views?					
7	You always consider and recognise cultural diversity on social media when sharing messages?					
8	You are able to search for information using keywords on the internet to obtain information or information related to the topic being studied?					

IV. DIGITAL HEALTH

Digital health is the field of knowledge and practice associated with the development and use of digital technologies to improve health, that include electronic medical records (EMR), data security and protection and Satu Sehat platform.

4.1. ELECTRONIC MEDICAL RECORDS (EMR)

Electronic Medical Record (RME), according to MOH Regulation No. 24 of 2022, contains data on patient identity, examination, treatment, actions, and other services that have been provided to patients using an electronic system.

RME is useful for improving the quality of health services to patients, both medical and non-medical

- Strongly Disagree
- Disagree
- Between Agree and Disagree
- Agree
- Strongly Agree

4.2. DATA SECURITY AND PROTECTION

The discussion on data security and protection refers to the ability of healthcare facilities to identify and mitigate data security risks and protect patient data.

Health data is important to guarantee and maintain confidence

- Strongly Disagree
- Disagree
- Between Agree and Disagree
- Agree
- Strongly Agree

Health care workers excluding doctors and competent personnel, are given access to patient health data according to their roles.

- Strongly Disagree
- Disagree
- Between Agree and Disagree

- Agree
- Strongly Agree

4.3. SATU SEHAT

SATUSEHAT is a health data exchange ecosystem that connects information systems or applications from all members of Indonesia's digital health ecosystem including health facilities, regulators, insurers, and digital service providers. SATUSEHAT as an ecosystem is in accordance with the Blueprint for Digital Health Transformation 2024 which can be accessed at dto.kemkes.go.id.

Are you informed about the SATUSEHAT platform/system?

- Yes
- No

Has the Information System in your workplace been integrated to SATUSEHAT?

- Yes
- No
- Don't know

Feedback on improving digital literacy for Primary Health Care Workers:



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