



# Effectiveness of E-Health Pediatric Assessment Triangle (PAT) on Response Time of Midwifery Students

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**Abstract.** In 2015, the world began working toward a new global development agenda, seeking to achieve, by 2030, new targets set out in the Sustainable Development Goals (SDGs). The proposed SDG target for child mortality aims to end, by 2030, preventable deaths of newborns and children under 5 years of age, with all countries aiming to reduce neonatal mortality to at least as low as 12 deaths per 1,000 live births and under-5 mortality to at least as low as 25 deaths per 1,000 live births. Referring to the 2017 Indonesian Health Demographic Survey, the Infant Mortality Rate (IMR) is 24/1000 live births. Strengthening the competency of midwives to improve high quality maternal and child health services has been seen as a priority by global health organizations. To support low and middle income communities. In improving health, this aims to consider the midwife's potential for reducing numbers maternal and child mortality based on several intervention scenarios. Respiratory Distress Syndrome is one of the causes of death in children. Research on Pediatric Assessment Triangle (PAT) E-health contributes to underprivileged communities to prevent financial burdens due to the high costs of hospitalization in PICU. This study aims to analyze the effectiveness of Pediatric Assessment Triangle (PAT) E-health reducing midwifery students time response. Research subjects using a simple random sampling technique. The research location is Universitas Muhammadiyah Semarang. This research held in 2023. The research design used a quasi-experimental, a pre and post-test research design with a control group design in each group with a simple random sampling technique. Data analyzed by the independent test and paired T test to test Pediatric Assessment Triangle (PAT) E-health effectiveness of midwifery students response time between control and treatment groups. The results of the analysis in the table above show that there is no difference in the response time of pre-test midwife students between the control group and the treatment group ( $p\text{-value} = 0.111$ ). After the intervention held, the results of the difference test showed a difference in the response time of post-test midwife students between the control group and the treatment group ( $p\text{-value} = 0.000$ ). The  $p\text{-value}$  obtained using the paired T test in the control group was  $= 0.117$ , so that there was no difference before and after in the control group. On the other side, the treatment group  $p\text{-value}$  was  $0.000$ , so that there are differences before and after in the treatment group. The conclusion of this study is Pediatric Assessment Triangle (PAT) E-health affect reducing midwifery students time response.

Keywords: E Health, PAT, Time Response.

## **1. Introduction**

E-health is defined as a fixed of technology implemented with the assist of networks, in health services to improve the quality of life and the delivery of health services. E health is the usage of cellular devices to enable patients to request health services electronically, use applications to verify information, and monitor medication or other health issues. The success of using e-health is related to several things, including user acceptance and the type of infrastructure, management and systems used [1]. In newborns with respiratory distress syndrome (RDS), exogenous surfactant reduce mortality rates and various forms of lung air leakage around 30-50%. In critical condition that threatens the life generally require treatment in the Pediatric Intensive Care Unit (PICU) [2]. Research on pediatric RDS reveals an incidence of around 1% to 4% of all patients admitted to the pediatric intensive care unit (PICU) [3].

Medical first responders are common in emergency situations medical services to reduce response time [4]. The capacity of midwives to reduce maternal and child mortality rates can be considered as part of country-level decision making regarding health system investments, and the recognition that midwives are most effective when working in multidisciplinary teams. We estimate the quantity of possible lives saved in various scenarios to increase coverage interventions that can be provided by existing midwives educated, trained, organized according to international standards, and work in a supportive environment in those countries which accounts for the majority of maternal and child deaths in the world [5].

## **2. Content**

### **2.1. Time Response**

#### **Definition of Time Response**

Time Saving is a saving philosophy that means that point is life or a whole action taken in times of emergency needs to be truly effective and efficient. Because the patient can lose life in just a matter of minutes. Stop breathing 2–3 minutes in humans can result in fatal death. Need will have an appropriate response time and efficiency important roles in every decision-making starting from the start of the patient's life until the patient moved from the Emergency Room. Suhartati (2011) revealed response time is rate in treating patients, calculated from the time the patient arrives until the treatment has been complete,

recommended response time for patients preferably <5 minutes. The underlying legal aspects are Decree of the Minister of Health of the Republic of Indonesia Number 856 of 2009 Emergency patients should be treated the longest 5 (five) minutes after arriving at the ER [6].

### 2.2. E-Health Pediatric Assessment Triangle (PAT)

Pediatric Assessment Triangle (PAT) whose sides represented by the patient's appearance, respiration, and circulation are each instruments for the purpose of standardizing evaluation the child's initial visit to the Emergency Department, and is based in quick observation. Based on visual cues and audits make it possible to determine the severity of the condition child and suggests a diagnostic impression or a pathophysiological analysis. Its use in the first contact with the patient in his arrival at the emergency department helps identify important functional impairment, is also possible determining the level of severity and urgency of the matter is necessary institute appropriate life support. Three the PAT element as a whole is capable of doing this reflects the child's overall physiological stage. Specifically yours general state of oxygenation, ventilation, perfusion and the function of brain. PAT is not always a diagnostic instrument but a tool that facilitates functional assessment immediately. The combination of the three components of PAT configures an overall impression prioritizes treatment initial. PAT can be adopted as a new innovation in the form of E Health when assessing patients according to triage, helping the classification and management process. Results from a previous study on the use of Telemedicine PAT revealed a relationship between diagnosis and treatment priorities.[7].



Fig 1. Login



Fig 2. Menu Input Biodata



Fig 3. Input Data



Fig 4. Interpretasi Data

### 3. Research Methods

#### 3.1. Methods

The study design is Quasi-Experimental by comparing between the treatment group and the conventional group. In both groups, skills assessment will be carried out before and after treatment (pretest-posttest control group design) [8]. The instrument used to measure response time.

#### 3.2. Sample design

Using simple random sampling, minimum amount of samples obtained is 30 people in each group.

### 3.3. Data collection

Respondent were invited by the researchers, then divided to a treatment group and a control group. Then response time data is collected to pre-test and post time.

## 4. Result and Discussion

### 4.1. Characteristics of Research Subjects

Respondent are presented to determine the equality between the control group and the treatment group based on age.

**Table 1.** Characteristics of Research Subjects (Age)

Age (year)	Group			
	Control		Treatment	
	N= 30	%	N= 30	%
21 – 25	13	43,3	17	56,7
26 – 30	12	40	9	30
>30	5	16,7	4	13,3

**Table 2.** Characteristics of Research Subjects (Semester level)

Semester	Group			
	Control		Treatment	
	N= 30	%	N= 30	%
1 <sup>st</sup>	14	46,67	14	46,67
2 <sup>nd</sup>	16	53,33	16	53,33

### 4.2. Frequency Distribution of Midwife Student Response Times

**Table 3.** Frequency Distribution of Midwife Student Response Times

Response Time	Group			
	Control		Treatment	
	N= 30	%	N= 30	%
<i>Pre Test</i>				
Appropriate	3	10	7	23,3
Not appropriate	27	90	23	76,7
<i>Post test</i>				
Appropriate	5	16,7	24	80
Not appropriate	25	83,3	6	20

#### 4.3. Analysis of the Effectiveness of E-Health PAT on Midwife Student Response Time

**Table 4.** Analysis of the Effectiveness of E-Health PAT on Midwife Student Response Time

Response Time	Time		p value*
	Control	Treatment	
<i>Pre Test</i>			<b>0,111<sup>a</sup></b>
Mean (SD)	7,17 (1,91)	6 (1,51)	
<i>Post Test</i>			<b>0,000<sup>a</sup></b>
Mean (SD)	5,93 (1,66)	3,3 (1,89)	
<b>p value*</b>	<b>0,117<sup>b</sup></b>	<b>0,000<sup>b</sup></b>	

The results of the analysis show that there is no difference in the response time of pre-test between the control group and the treatment group (p-value=0.111). After intervention, the results of the difference test showed difference in the response time of post-test midwife students between the control group and the treatment group (p-value=0.000). The p-value obtained in testing using the paired T test in the control group was p-value = 0.117, so that there was no difference before and after in the control group, while in the treatment group known that the p-value was 0.000, so the conclusion is there was a difference before and after in the treatment group.

Most of the respondents in the control group were student with age 21 – 25 years old (43,3%) and most of the respondents in the treatment group were student with age 21 – 25 years old (56,7%). The results of the statistical test showed that the response time reduce after Pediatric Assesment Triangle (PAT) E-health intervention. Most of the respondents in the control group were student in 2nd semester (46,67%) and most of the respondents in the treatment group were student in 2nd semester (46,67%). Previous research revealed that although mental status testing provides basic information on the integrity of most cognitive functions, the tests tend to lack sensitivity to detect mild cognitive impairment. In addition, most tests of mental status do not have normative data, so the effects of various demographic variables (e.g., age, gender, education) are unknown. Despite these limitations, the tests provide useful information, and some form of mental status testing should be a part of all neuropsychological assessments. Life history may include basic demographic such as age, education, gender, developmental history, medical history, occupational history, and academic history that are thought to be related to cognitive performance [9].

Based on normality testing using Kolmogorov-Smirnov, it is known that from each group the p-value > 0.05, it can be said that the data is normally distributed. Then hypothesis testing can be continued. According the table above, it is known that the value of the homogeneity test using Levene's Test obtained a p-value > 0.05, so it can be concluded that

the data is homogeneous. Then, hypothesis testing using independent tests and paired t-tests.

The e-health strategy has three main components: (i) knowledge management; (ii) tools and methods; and (iii) policies. These components work to consolidate healthcare systems with support networks and scientific and technological production, manage infrastructure and human resources, reduce barriers to accessing health services, and promote community inclusion. Some barriers to e-health include the difficulties faced when using systems and applications, both by healthcare professionals and patients, as well as ensuring the security and privacy of user data transmitted throughout these systems. Another challenge in e-health is that new E-health systems must interact with existing systems, and must use a standard electronic language between hospitals (or clinics) to facilitate communication and data exchange, as well as formal agreements on how the systems should work with each other. standardized way. In addition, the cost of implementing e-health also presents challenges that may make implementing such systems impossible. This is related to the high level of investment required to purchase equipment to implement more sustainable practices compared to traditional systems of keeping paper records, as well as the costs of employing specialized support personnel in information technology (IT) to keep the systems running and software acquisition. [1].

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