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# Literature Review: Information Technology in Early Detection of Pregnancy Risks and Stunting Prevention in the Era of the COVID-19 Pandemic

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## ABSTRACT

The competence of midwives in early detection of pregnancy risk and prevention of stunting is an important factor to improve health status. The competence of midwives contributes to the improvement of maternal health status by 79%. In addition to the ability of midwives, the independence of pregnant women is also needed in improving the quality of life of children. In the era of the pandemic, access to information is increasingly limited, so it is necessary to develop information technology that is easily accessible by all groups. The purpose of this article is obtaining a theoretical study of information to improve the competence of midwives and obtaining 10 theoretical study of information technology to increase the independence of pregnant women in early detection of pregnancy risk and stunting prevention. The design used is a literature review. Articles are collected using search engines such as EBSCO, Science direct, and Proquest. The criteria for the articles used are those published from 2015 to 2021. Based on the articles collected, the results show that Utilization of information technology can be used for various things. The target of information technology can penetrate various circles. The need for information technology today is unavoidable and must be improved. Website-based application is one of the information technology that can be accessed by anyone who has the internet and its use is easy. The conclusion of the study is that information technology can be used in early detection of pregnancy risk and stunting prevention.

Keywords: Information Technology, Stunting, High Risk

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## 1. INTRODUCTION

Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) are important indicators in describing the welfare of society in a country. Maternal Mortality Rate is death during pregnancy until or within 42 days after delivery. Infant Mortality Rate is a number that shows the number of deaths of infants aged 0 years out of every 1000 live births in a given year.(1)

Based on UN data, the IMR in 2019 was 21.12%. This figure decreased from the record in 2018 which was 21.86%. Although this figure has decreased, it is still far from the target of SDGs 2030, which is 70 deaths

per 10,000 live births.(2,3)The 2nd sustainable development goal in the Sustainable Development Goals (SDGs) is to eliminate hunger and all forms of malnutrition by 2030 and food security. The target set is to reduce the stunting rate to 14% by 2024.(4)

The high Maternal Mortality Rate and Infant Mortality Rate indicate the low quality of life and socio-economic conditions of the people in Indonesia. The per capita income of the Indonesian people is still relatively low. The economy in Indonesia in 2020 decreased by 2.07%. In addition to economic factors, the dominant cause of AKI and IMR are emergency cases that cannot be handled properly and quickly. Maternal and neonatal emergencies can occur anywhere and anytime, so that adequate capabilities and skills are needed for health workers in early detection of high risk.(5) In addition, the independence of the mother in early detection of pregnancy risks is also needed, as a step to anticipate emergency cases.(1)

Midwives are at the forefront of implementing maternal and child health services in Indonesia. The competence of midwives in carrying out early detection of pregnancy risks is absolutely necessary to prevent morbidity and mortality. The competence of midwives in carrying out early detection of pregnancy risks is absolutely necessary to prevent morbidity and mortality. This is necessary to encourage the achievement of government programs, namely the reduction of stunting.(6) The competence of midwives contributes to the improvement of maternal health status by 79%.(5)

The competence of midwives in early detection of pregnancy risk and prevention of stunting is an important factor to improve health status. Competent caregivers affect the health of mothers and babies by 87%. The results of Harmiyatur's research in 2016 showed that 69% of midwives were less competent and had an effect on neonatal mortality of 62.8%, while Susanti's research showed that midwives' competence contributed to the health status of pregnant women by 79%.(7)

The government has made efforts to improve the capabilities of midwives, such as through training, seminars and workshops. In addition, seminars are often held for pregnant women and midwives. During the COVID-19 pandemic, the implementation of these activities experienced obstacles because the government limited activities that involved many people, so that access to information was low. This is what makes consideration for the development of an information system that is easily accessible by everyone. Making application systems is used to provide the latest information, so it is expected to increase preparedness in carrying out early detection of high risks.(8)

Based on the results of a preliminary study of 103 health workers from the healthy archipelago, it is known that as many as 61.2 percent of respondents are in very remote areas. Health workers from the healthy archipelago, as many as 85.4 percent can access the internet in placements, 72.27 percent can access a website, 95.45 percent can access applications such as Halodoc, Telegram, and WhatsApp, 4.55 percent can access YouTube, and 1.14 percent can access facebook.

These various descriptions are the background for making information technology that can be used by midwives and pregnant women in updating knowledge and increasing midwives' competence in high risk detection. The purpose of this literature review is to obtain a theoretical study of information to improve the competence of midwives and to obtain a theoretical study of information technology to increase the independence of pregnant women in early detection of pregnancy risk and stunting prevention.

## 2. RESEARCH METHOD

This study uses a literature review, namely a description of the theory, findings, and other research materials obtained from reference materials to be used as a basis for research activities to develop a clear frame of mind from the formulation of the problem to be studied. The data sources in this study used books and scientific journals related to the topic being studied. Literature searches were carried out both internationally and nationally using the EBSCO, Science Direct, and Proquest databases. The selection of data sources is based on aspects of provenance or evidence support, objectivity, persuasiveness, and has a contributively value so that the author's argument can be convincing.

Methods of data collection using the method of documentation. The documentation method is a method of collecting data by finding and digging data from the literature related to the formulation of the problem. In the early stages of searching for journal articles, 53 journal articles were obtained from 2015 to 2021 using the keywords "increasing knowledge and competence in midwives", "increasing independence in pregnant women", "increasing early detection of pregnancy risk", "prevention of stunting in children", "information technology to provide education to midwives and pregnant women", and "information technology to improve skills and knowledge". Of these, only about 24 journals are considered relevant. Of the number of articles, 6 articles have full criteria.

### 3. RESULTS AND ANALYSIS

Based on the results of the articles collected and analyzed by the author, it was found that information technology can be implemented in various fields. The use of information technology in the health sector according to several studies is as follows:

The first article is entitled Website as a Social Media Marketing Health Program. Based on the review of the article, the use of the website is very appropriate to be used in marketing media for health programs because it has a broad reach, is well targeted, has a variety of message content, and is economical. The use of a website that is supported by interesting and useful content is expected to make the health program a success. This will make the program get a positive response so that it spreads, both word of mouth and online.(9). The digital media program, a social marketing intervention to support mental health promotion, has generated more than 24,500 website visits per year, 3500 tweets, and 14.5 million twitter impressions with good save and download rates. The analysis shows that the material is mostly used by doctors and service managers using computers.(10)

The article entitled Recommendations for Health Workers in Disaster Locations Utilizing a Website-Based Fuzzy Inference System Model. The website-based system will assist in registering volunteers who are in the field so that they can be mobilized effectively and can be placed in locations according to their abilities. The hope is that this system can help speed up the handling of victims in the event of a disaster.(11) The system is implemented using a website-based platform so that it is easy to run.

The next article is entitled Mobile Website-Based Health Expert System for Pregnant Women. This study proves that the application made in this study is capable of reasoning with the forward chaining flow with the help of decision trees and decision tables.(12) This mobile website-based system can be used for pregnant women to help determine their condition, such as consulting a doctor or midwife. This system can support the independence of pregnant women in increasing knowledge and detecting early pregnancy risks.(12)

Article *Defining Information Quality into Health Website: A Conceptual Framework of Health Website Information Quality for Educated Young Adults*. Based on the literature review, it is known that the purpose of the study is to develop a conceptual framework for the quality of information on health websites. The results showed that the dimensions of the quality of health website information were identified from the completeness of the information and the accuracy of the information. The most important quality dimension is seen from the completeness and understanding of information.(13)

The article is entitled Development of a Web Based Health Care Intervention for Patients with Heart Disease. The literature presents the findings in two parts. First, the results of the participatory design process indicated that users provided valuable feedback on the ease of use of the platform tracking tool, platform design, terminology, and insight into patient monitoring needs. Second, the experiences of participatory patients and nurses contributed different perspectives, with patients using an experience-based approach, and with nurses using a more attitude-based approach. From the results obtained, it is concluded that the web can be used appropriately in patients with heart disease.(14)

Next, literature on Website Evaluation in Health Sector. Based on the review conducted on the article, the fundamental health sector website has content, technology, service, and participation assessment criteria covering the entire spectrum of assessment elements identified from the literature review. Health sector website evaluators should be able to clearly identify whether certain goals or targets have been met and adaptation to the institutional website situation is also required.(15)

Based on the literature, it can be seen that the use of information technology can be used for various things. The target of information technology can also penetrate various groups. The need for information technology today is unavoidable and must be increased. Website-based application is one of the information technologies that can be accessed by anyone who has the internet and its use is easy.

- a. Website-based applications are applications that can be operated via a browser. Web-based applications can be used for various purposes. This application can also be used to manage inventory and can also work for monitoring display.(16)
- b. The process of delivering information through the website. One of the advantages of website-based applications is that they are lightweight and can be accessed quickly via a browser and an internet or intranet connection to the server. Users can access any data or information through laptops, smartphones and even computers at home easily, unlike desktop applications that have to install software or applications.

As an implementation, website applications can be connected to the database. Thus, changes to information can be made by the operator or those responsible for updating the data and are not the responsibility of the programmer or web master.

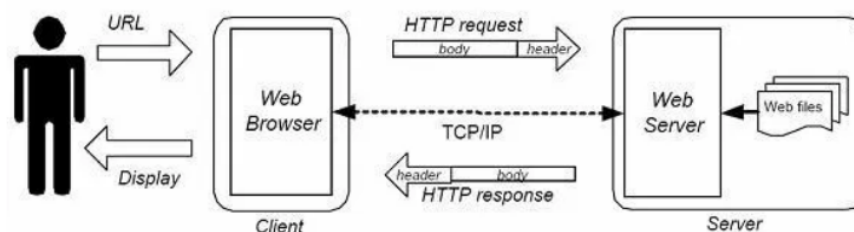


Figure 1. How the Website Application Works

c. Use of Website-Based Information Technology in Midwifery

Midwives are health workers who provide maternal and child health (KIA) and family planning (KB) services. Most of the recording of midwife services is still managed conventionally, namely by manual recording. This is less effective and efficient which causes the workload to increase, the information retrieval process is quite long and the risk of losing important data is likely to occur frequently. On the other hand, maternal patients are required to visit the midwife directly if they want to know information on the development of pregnancy and their children under five.(17).

Information technology can be developed, one of which is so that manual recording is changed to digital recording, making it easier for midwives and pregnant women. For midwives, information technology is useful for accessing the latest information, recording transactions, making reports and delivering information. For pregnant women, information technology is useful for accessing information and monitoring health developments independently.

#### 4. CONCIUSION

The conclusions of the study conducted are as follows:

- The existence of information technology is expected to increase access for midwives to obtain information and increase competence in carrying out early detection of pregnancy risks and stunting prevention
- The existence of information technology is expected to increase the independence of pregnant women in carrying out early detection of pregnancy risks and preventing stunting.

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- It is necessary to conduct a field study using force field analysis to assess the technical feasibility, economic feasibility, and operational feasibility of information technology to improve the competence of midwives and the independence of pregnant women in early detection of pregnancy risk and stunting prevention.
- It is necessary to study the applied effectiveness of the use of information technology to improve the competence of midwives and the independence of pregnant women in early detection of pregnancy risk and stunting prevention.
- A study is needed to assess the acceptance of information technology to improve the competence of midwives and the independence of pregnant women in early detection of pregnancy risk and stunting prevention

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