

Development of a Website-Based Online Health Screening and Education Database Related to Noncommunicable Diseases (NCDs) in Realizing Health Promoting University

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ABSTRACT

Background: The use of website-based reporting in reporting screening databases and health services is still rarely used and developed in educational institutions. Websites can also be used as educational services to increase literacy and knowledge of the community, especially the academic community. **Objectives:** This research aims to develop a website database for noncommunicable disease screening and website-based health education to create a healthy campus. This is in line with the increasing trend of noncommunicable diseases in the university setting. **Method:** This research uses a quantitative R&D model approach by implementing several development stages. The informants in this study numbered 23, consisting of three experts for website assessment and 20 website users who were selected purposively. **Results:** The research results showed that the need assessment of a website entailed a) Information systems can be used as a medium for health-related education, especially those related to noncommunicable diseases, b) Information systems are used to record visits by Posbindu participants, c) Information systems are used to process and display data on risk factors for noncommunicable diseases, and d) Information systems process and display information related to healthy campuses. The average assessment validation of professionals was 94.07% (very feasible), and participants validation was 91.44% (very feasible). **Conclusion:** Development of a noncommunicable disease screening database website and website-based health education to make a healthy campus a viable medium for providing health information.

Keywords: Education, Noncommunication Disease, Screening, Website

INTRODUCTION

Noncommunicable diseases (NCDs) are one of the leading causes of death in the world. Data from the World Health Organization (WHO) show that as many as 41 million people die each year due to noncommunicable diseases or equivalent to 71% of all deaths globally. In addition, data show that more than 15 million people die from NCDs between the ages of 30 and 69 every year (World Health Organization, 2021). The causes of these high NCD deaths are smoking, physical inactivity, harmful use of alcohol, and unhealthy diet which can increase the risk of death (World Health Organization, 2021).

NCDs can attack anyone, including the academic community in higher education. This is because most of the academic community spends their time on campus. In addition, stress, workload, unhealthy lifestyle patterns, and welfare

levels that are not proportional to performance demands on lecturers can trigger the occurrence of NCDs. Based on the results of research conducted by Kalsum et al. (2020) The number of lecturers at Jambi University who died from 2015 to 2021 was 25 (2.5%). The main causes of death in lecturers were noncommunicable diseases (96%), especially diabetes mellitus (28%), heart attack, hypertension, liver cancer, and autoimmune. Various efforts have been made to reduce the high number of NCDs, one of which is through early detection and screening. Early detection is a health effort that includes activities such as blood pressure measurement, blood sugar measurement, body mass index measurement, risk behavior interview, and healthy lifestyle behavior education (Minister of Health of Republic of Indonesia, 2019).

The results of early detection measurements are needed to determine



the interventions to be carried out. Reporting is usually done manually and in print. However, reporting through this method is not very effective (Mardian et al., 2019). This is ineffective because it has several weaknesses including manual recording being carried out from one datum to another, inefficient in its work, there is a risk of difficulty finding data or losing data and there needs to be high supervision because the data are not automatically done. One of the efforts made to overcome these problems is that reporting can be done by utilizing website-based technology (Putri & Nurlaila, 2022). In addition, the website can also be used in consultation and education services, especially regarding non-communicable diseases.

One of the efforts made to overcome these problems, reporting can be done by utilizing website-based technology especially it can also be used in consultation and education services, especially regarding NCDs. The increase in NCD cases is expected to increase the burden on society and the government because its handling is costly and requires high-technology (Sulistyaningsih & Listyaningrum, 2021). The presence of website-based mHealth as one of the technology products is expected to help in accessing information or data in the agency. (Mardian et al., 2019). The website can also be used as an educational service to increase public literacy and knowledge. Chau et al. (2012) found people are satisfied with the web-based education service by paying attention to the aspects of format, content and accuracy of the education program.

High morbidity rates and risk factors for death from noncommunicable diseases in the university environment and the use of website-based reporting in terms of reporting database screening and health services is still rarely utilized at Jambi University, especially in the Faculty of Medicine and Health Sciences. In addition, reporting of NCD risk factor screening data is still done manually and is not well-organized. Therefore, there is a need for a website development study related to this matter. This is in line with the commitment of Jambi University in realizing a healthy campus through the Health Promoting University (HPU) program. This research is also an integration with community service

activities developed by the HPU Pinang Masak Faculty of Medicine and Health Sciences through the noncommunicable disease integrated coaching post (Posbindu) program. Therefore, the purpose of this study is to determine the description of the stages of defining, designing, developing, and obtaining a website-based NCDs screening database and health education in realizing a healthy campus.

METHODS

This research used a quantitative approach with a research and development (R&D) model. The product in question was not only limited to the production of a book or module but can also take the form of procedures or processes such as learning methods or organizational methods that can be in the form of software or hardware (Sanjaya, 2013; Sumarni, 2019). The approach used in this research is the 4-D model (Thiagarajan, 1974). In this study, the product developed is a website that functions as a health database including screening report data and website-based educational services. This research will be carried out at the Faculty of Medicine and Health Sciences, Jambi University as an initial development location and pilot project for website utilization in health services. Activities were carried out from March to September 2023.

The sample in this study was taken by purposive sampling with the following criteria: one community health centers officer who holds the NCD program (Campus work area), one NCD section officer of the Jambi provincial health office, one healthy campus administrator (Health Promoting University) and 20 persons (10 education staff and 10 lecturers) as application users. The stages of this research and development simply consist of: 1) defining stage, 2) design stage, development stage and deployment stage. The data collection techniques in this study were obtained directly through interviews for reviewing the website from experts and using a product development assessment questionnaire. Instrument is an independent development that has been validated. In-depth interviews were conducted with a community health center officer, NCD section officer of the Jambi provincial health office and healthy campus administrator (Health Promoting

University). In addition, other data were obtained using literature studies on noncommunicable diseases.

Data were analyzed using a computer to determine frequency distribution and qualitative data were analyzed manually. The analyzed data were categorized in several levels of feasibility test including: Very feasible (80%-100%), Feasible (60%-79%), Fair (40%-59%), Less Feasible (20%-39%), and Very Unfeasible (0%-19%) (Fikri, 2022; Sunarto & Riduwan, 2017). The website assessment indicators were developed and adopted from various research sources, including aspects of appearance, information adequacy, ease of access and several other aspects (Perwira, 2015; Surandari, 2019). This study has been ethically tested from the Jambi Health Polytechnic No LB.02.06/2/626/2023.

RESULTS AND DISCUSSION

Respondents' Characteristics

Table 1. Respondents' Characteristics.

Initials/ Age (years)	Gender	Institution	Description
SF/47	Female	Jambi Provincial Health Office	Content Validator
ES/45	Female	PKM Simpang IV Sipin	Content Validator
PS/30	Female	HPU Unja Manager	Content Validator
HR/30	Male	FKIK	Participant
JA/42	Female	FKIK	Participant
NS/43	Female	FKIK	Participant
YD/34	Male	FKIK	Participant
DN/34	Female	FKIK	Participant
AS/39	Male	FKIK	Participant
WD/35	Female	FKIK	Participant
PG/30	Female	FKIK	Participant
SW/46	Female	FKIK	Participant
YW/34	Female	FKIK	Participant
RM/25	Male	FKIK	Participant
DS/40	Female	FKIK	Participant

Initials/ Age (years)	Gender	Institution	Description
HS/38	Female	FKIK	Participant
FJ/31	Female	FKIK	Participant
EAR/53	Female	FKIK	Participant
BA/39	Male	FKIK	Participant
NA/31	Male	FKIK	Participant
AD/32	Female	FKIK	Participant
MB/38	Female	FKIK	Participant
AN/30	Male	FKIK	Participant

Respondents in this study totaled 23 participants consisting of three expert validators and 20 participants. Participants were lecturers from the Faculty of Medicine and Health Sciences (FKIK) Jambi University.

Website Development

The development of information systems related to education and noncommunicable disease screening databases is based on the unavailability of information services in the health sector specifically related to non-communicable diseases. In addition, the university already has a means of screening noncommunicable diseases through Posbindu Astano activities, and the database was still manual. In addition, some research conducted by lecturers on the Jambi University campus states that noncommunicable diseases were quite high. This needs to be a concern so it requires an information system that meets these needs.

At this stage, researchers conducted a needs analysis through observation which included analyzing system needs and analyzing hardware and software requirements. The minimum requirements that must exist include: a) Information systems can be used as a medium for health-related education, especially those related to noncommunicable diseases, b) Information systems are used to record visits by Posbindu participants, c) Information systems process and display data on risk factors for noncommunicable diseases, d) Information systems process

and display information related to healthy campuses. In addition, the research conducted a literature study related to website content and templates and data screening. This website was an information website and a database website. The information website referred to the website <https://hpu.ugm.ac.id/>. Gajah Mada University's website was used because the development of a healthy campus in Indonesia was first initiated by the university through HPU (health-promoting university) activities. In addition, the content on the website has also adopted HPU indicators per AUN-HPN ASEAN University Network-Health Promotion (Universitas Gadjah Mada, 2023).

The website content related to the database refers to the Aplikasi Sehat IndonesiaKu (ASIK). It is one of the applications launched by the Indonesian Ministry of Health through the Digital Transformation Office; this application is used to record individual immunizations and to conduct early detection of infectious and non-communicable diseases and UKBM programs (Posyandu) so that in the future it will make it easier for reporting officers to check and verify the target database according to the region. Screening data included information questions regarding participant's personal data, family disease history, personal disease history, risk factors, anthropometric measurements, blood sugar measurements, blood cholesterol, and uric acid measurements, additional examinations (eye examination, ear examination) (Ministry of Health RI, 2023).

In the next stage, researchers conducted interviews with website developers regarding hardware and software requirements. At this stage, an analysis of hardware and software needs was also carried out to know the needs for information systems related to educational websites and databases regarding infectious disease prevention, so that they can be operated properly without constraints. Website developer recommendations related to the needs of software and hardware specifications used tools used to run this system include a trap computer, Apache Laragon Webserver, PHP 8.0, MySQL Database, and Laravel 9 Framework.

Design Stage

The system design developed includes the design of the United Modeling Language (UML), database, and user interface.

United Modeling Language Design

In this process, there were two stages that needed to be described through a use case diagram consisting of actors and interactions carried out in a system. In the use case diagram system, there are three actors, namely admin, cadres, and guests. In addition, it also uses a class diagram that will compile each command and material in it.

Database Implementation

At this stage, several processes also needed to be completed including: 1) Database Design done using MySQL database and MySQL Workbench as the Graphical User Interface 2) Coding (Translating) web logic into program code; the coding stage was carried out using the PHP programming language, Laravel framework and visual studio code text editor. 3) Deploy (Publish) the website to be online so that it can be accessed by users; the deployment process uses Hostinger web hosting which runs on a Linux operating system server.

Implementation of Display Function

Implementation of Health Promoting University (HPU) information system using Laravel framework, bootstrap, and uikit. Here are some website views of the development results. This stage is a stage in the software development process after analyzing the needs and system design. The design is then implemented in programming language code so that the software can be used in real terms to solve problems according to its function. There are the main page on the education system (Image 1), Login page (Image 2), Website Admin, and Cadre Dashboard Page (Image 3).

Development Stage

At this stage, there were several activity processes, namely website content development and validation carried out by professional expert validators. The first stage is the implementation of website content development; this stage is the stage of fulfilling educational content related to infectious diseases or risk factors related to NCDs. Educational content is sourced from journal references, books, or websites made in the form of articles that will be posted to the website. Here are some views of the

results of content development on the website (Image 4 & 5).

The second stage is the feasibility validation test; at this stage, there are several processes starting from the assessment by three professional expert validators including Posbindu and NCDs officers of Simpang IV Sipin Community Health Center, the Health Office, and HPU Unja administrators. This stage also revised the results of input and suggestions from professional expert validators and finally the product trial process to participants.

Table 2. Average Of Media Expert Recapitulation.

No	Aspect/ Indicator	Value (N=3)	Max Value	Feasibility Percentage (%)
1	The appearance of the information system is very interesting and not boring	15	15	100
2	The information generated is quite complete	13	15	86.7
3	The website is easily accessible to everyone	15	15	100
4	The information system makes it easy to search and find out about noncommunicable disease information	15	15	100
5	The text on this website is easy to read and understand	15	15	100
6	The information generated is helpful to everyone	15	15	100
7	Website makes it easy for people to get detailed information about health services	13	15	86.7
8	The process of accessing this information system is quite easy and clear	13	15	86.7
9	This healthcare information website deserves	13	15	86.7

to be published			
Total	127	135	94.07
<i>*Feasibility: Very feasible (80%-100%), Feasible (60%-79%), Fair (40%-59%), Less Feasible (20%-39%), and Very Unfeasible (0%-19%).</i>			

Based on the data from the validation results of the validator assessment above, the average value is the total of the assessment scores from three validators, obtained with a percentage of the feasibility of 94.07%. This indicates feasibility with very feasible criteria.

Design Revision

This stage is the process of improving the design that has been tested by experts with comments, input, and suggestions. The first input is the addition of questions and fields in the screening system including the addition of questions for smoking cessation efforts and filling in data on CO2 levels in the lungs.

"..Smoking Cessation Attempts (UBM) can also be included, there are students who smoke, lecturers too, it's almost the same as ASIK, but it's okay if it's included, right now there are still many who smoke, in UBM, Pak Ode can add questions about whether there is smoking, whether exposed to smoking, how many packs in a year or a day ..." (ES, 45 Years)

We from the Health Office, yes sir, especially we from the Directorate of Noncommunicable Disease Prevention and Control Unit (P2PTM) and Mental Health Unit (Keswa) section are very supportive. Very grateful for the development of this website, if I see in general this is very supportive of the existing programs in our P2PTM and Keswa sections, and this is also almost the same as the ASIK application that we have, sir ... only in ASIK there are also programs related to Smoking Cessation Efforts that have not yet been included in ASIK, which also from the Ministry of Health is currently still using the SIPTM application, it will also be in the process of entering the ASIK application.... Well maybe also here can be added to the examination related to smoking, the examination of CO levels because what we also

see is that smoking is from school-age children, I'm sure it will increase our coverage of early detection of noncommunicable diseases now too, if other detection of other infectious diseases at FKTP has been carried out with the NCD guide, only that is a bit weak, related to efforts to stop smoking..." (SF, 47 Years)

In addition, several other inputs were given regarding the need for special items related to the IVA Test Screening and Psychiatric Examination (Image 6). This is because it supports programs that are being promoted by the Jambi city government. This is as conveyed by the informant as follows:

"The content and appearance are very good, including examining the eyes, and ears, for beginners for us to start this is quite complete sir, maybe this is also an addition sir, I see that we have a GME (Mental Emotional Disorder) examination which is quite high right, students who are depressed in lectures, we include it, it's good to sir..." (SF, 47 Years)

"Yes, if you look at the risk factors, this is already complete, yes, family history of the disease, personal, risk factors, then physical activity comes in, if this is complete, maybe for women, yes, the examination is added to whether she has done an IVA for lecturers, because one of these NCDs is an IVA and breast examination. IVA and breast examination itself, yes, because in anthropometric measurements it is already right, well the addition may be IVA examination because it is promoted by our Governor's mother, for lecturers yes, because students are not married ..." (ES, 45 Years)

Product Trial to Participants

Based on the data from the participant group results above, the average value which is the total of the assessment scores from 20 participants, from 20 participants shows very feasible

Dissemination Stage

This stage was a stage in system development. At this stage, the researcher published the results and promoted the information to the parties involved. Promotion was done through social media and direct communication.

criteria with a feasibility percentage value of 91.44%.

Based on the results of the interview, all respondents understand the content of the website content and the display is attractive. Informants also stated that this is an innovation. However, informants also said that the information presented should be expanded. This is in line with the results of the assessment of the participant group.

Table 3. Average of Product Trial.

Aspect/Indicator	Value (N=20)	Max Value	Feasibility (%)
The appearance of the information system is very interesting and not boring	93	100	93
The information generated is quite complete	92	100	92
The website is easily accessible to everyone	90	100	90
The information system makes it easy to search and find out about noncommunicable disease information	88	100	88
The text on this website is easy to read and understand	90	100	90
The information generated is helpful to everyone	93	100	93
The website makes it easy for people to get detailed information about health services	89	100	89
The process of accessing this information system is quite easy and clear	93	100	93
This healthcare information website deserves to be published	95	100	95
Total	823	900	91.44

**Feasibility: Very feasible (80%-100%), Feasible (60%-79%), Fair (40%-59%), Less Feasible (20%-39%), and Very Unfeasible (0%-19%).*

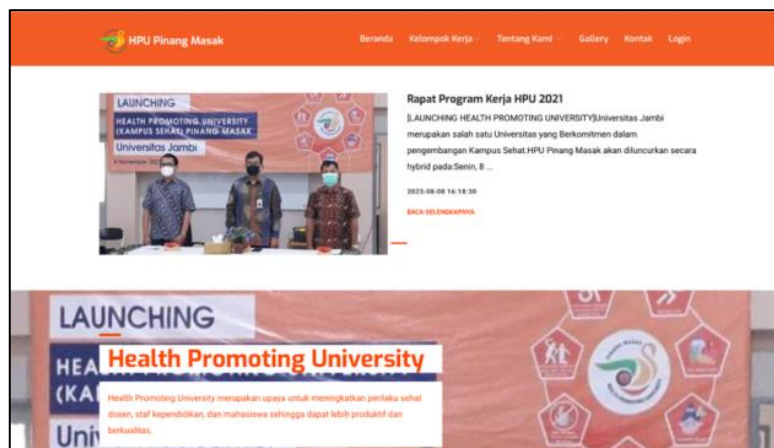


Figure 1. Website Home Page.

The initial stage in a website program development is to analyze its needs. This needs analysis is a very important aspect in program development because of the database in a design and can also avoid a program implementation process that is not good from the system (Anita Azmi et al., 2020). This is in line with the opinion of (Anita Azmi et al., 2020; Triayomi et al., 2023; Waldopo, 2011) that needs are a form of inequality between the current situation and the situation that should be. So indeed if a situation is not what should be then it is a need. The needs analysis stage is the stage of problem identification and literature review according to Triayomi et al. (2023). The information generated in the website design assessment is in the form of analyzing the needs of both the facilities and infrastructure used, school communication media, and collecting journals related to the development of school websites. If the inequality or gap is greater, it needs to be a priority that must be addressed immediately. This priority need is referred to as a problem. Some classify this need into two, namely target needs and learning needs (Hendriyani et al., 2018).

In this research, aspects of system requirements are needed for health information services which specifically discuss NCDs (non-communicable diseases) which are still not available. There are four important items of information obtained in analyzing the needs of website design in this study. These are: a) Information systems can be used as a medium for health-related education, especially those related to noncommunicable diseases; b)

Information systems are used to record visits by Posbindu participants; c) Information systems are used to process and display data on risk factors for noncommunicable diseases; d) Information systems process and display information related to healthy campuses.

Additionally, the service for noncommunicable diseases at the university is in the form of an integrated coaching post-service with screening activities for non-communicable diseases. Regarding the reporting of these activities, it still uses a manual system or is not yet website-based. In this era, various companies have reduced the form of work systems that are still manual, this is because this manual system still has many shortcomings related to long processing time and more labor. Besides that, by utilizing web-based digital technology in managing the payroll system all data can be easily and quickly processed and minimize errors that will occur if it is still done manually (Ahyadu & Danuri, 2011; Efendi et al., 2023; Supriati et al., 2021). This is the basis for consideration of website design in this study.

The design of the database system is useful as an initial description of the system to be created. This design is divided into three parts, namely the United Modeling Language (UML), database (database), and display (user interface). UML is one of the tools/models for designing object-oriented software development (OOP); this development is a tool used by its developers (Ristianti, 2019). Development is with object-oriented programming (OOP) according to

Ramadhani (2015). UML is a programming approach that uses objects and classes. In designing using UML there are several process flows, namely use case diagrams which are descriptions of the functions of a system from a user perspective. Use cases work by describing typical interactions between users of a system and the system itself through stories of how a system is used (Madre et al., 2021).

Furthermore, the class diagram describes and descriptions of classes, attributes, and objects and their relationships with each other. Class diagrams can provide a global view of a system. This is reflected in the existing classes and their relationships with each other. A system usually has several class diagrams. Class diagrams are very helpful in visualizing the class structure of a system. This diagram is commonly used in object-oriented system modeling. Class diagram serves to explain the type of system object and its relationship with other objects. (Rahmatuloh & Revanda, 2022).

The validation was conducted by three professional expert validators, namely Posbindu and PTM officers of Simpang IV Sipin Community Health Center and staff of the Health Office and HPU management of Jabi University. The results of the assessment showed a feasibility percentage of 94.07% with the eligibility criteria of "Very Feasible." Therefore, the website development can continue at the next stage, namely conducting product trials. This feasibility is also very good for the future website development process because this website functions as a means of distributing health-related information consumed by the community. This is in line with a study conducted by Purnaningsi et al. (2022) where research conducted educational activities carried out nine times online. There was an increase in partner knowledge regarding the prevention of free sex from the average results of the thematic pre-test and post-test from 54 to 93.67. They concluded that the learning method using the GEKA.id website was able to increase the knowledge of its users (Purnaningsih et al., 2022).

About the input given, namely the addition of a smoking cessation service column, smoking behavior among the

public is a problem that is difficult to overcome due to various complex factors in society. This is in line with what the WHO said about health problems that occur and are the main cause of the onset of various diseases leading to death. It is stated that the estimated number of smokers in Indonesia until 2025 will rise to 90 million people. Even more sadly, 45% of Indonesians think that cigarettes are one of the things they need (Hasanah & Hayati, 2022). This is a problem that must be prioritized through activities that can influence smokers to quit smoking. Screening of smokers is very important to detect early the impact of cigarettes that have been consumed for a long time. From the results of the research that has been done, it is found that screening related to the impact of smoking behavior can be a motivation for someone to quit smoking because the screening carried out is related to diseases due to the impact of cigarette smoke that is smoked. In this study, lung screening and smoking were integrated. From the research, it turns out that intervening with smokers is more effective in this way because it is more intensive, personalized, and more effective for smokers (Kaufman et al., 2018; Moldovanu et al., 2021). This is why it is important to conduct such services from a website that can be accessed easily.

In addition, professional expert validators also provided suggestions and input regarding the addition of content on the website related to the Screening IV A test and special content for mental examination. Regarding the importance of screening IV A test, is an intervention carried out to reduce cervical cancer cases. This is in line with the results of research that has been conducted in India that found the test has a good impact on services related to cervical cancer screening programs in low-resource areas (Poli et al., 2015). These results are supported by other studies that explain the incidence of cervical cancer which is more prevalent in developing countries compared to high-income countries (Mezei et al., 2017). In addition, the importance of screening is also related to the high case of deaths due to cervical cancer in women. There are 80%-90% of women with this cancer are difficult to cure because they only come to the health center with conditions that are already at an advanced stage, reaching 70% of cervical cancer

cases. So the role of health promotion is needed in this case to reduce cases and provide knowledge on women's awareness for early detection of cervical cancer (Fridayanti & Laksono, 2017). Health promoters can intervene in screening and information provision from the developed website.

Mental examination is a process to examine a person's psyche. According to the WHO, mental health itself can be defined as a condition of well-being of an individual who is aware of the potential of, when an individual experiences pressure and things that can make shake in his life and unable to be more productive and contribute to the place where he is (Thamrin et al., 2023). The importance of psychiatric screening among universities is due to the many cases in universities in the incidence of psychiatric disorders. This is in line with research that has been conducted showing the results of the SRQ29 screening conducted on pharmacy students at one of Yogyakarta's universities which found that there were 75% of people who experienced PTSD, anxiety, and depression disorders as much as 61.36%, drug-induced disorders as much as 2.27% and psychotic disorders as much as 50% (Desvita et al., 2022). In addition, the importance of screening for mental disorders is related to their treatment, which can be controlled if detected early (Talen et al., 2013). This detection is also beneficial for reducing co-occurring mental disorders and medical illnesses (Mertens et al., 2017).

The next stage is to test the website product to participants to assess the feasibility of the product being developed at this time. Based on the data from the results of the participant group consisting of 20 participants, the criteria were "Very Feasible" with a percentage of feasibility of 91.44%. Participants are health workers and also the academic community at the Faculty of Medicine and Health Sciences, Jambi University. So it can be concluded that this website product is very feasible to distribute and use.

In the flow of research, it is very important to disseminate research results to the public. Research dissemination is useful for authors to describe the research process to the community with a focus on gaps. Dissemination can be defined as the active dissemination of evidence-based interventions to the target community by

utilizing certain channels with a planned strategy (Bernhardt et al., 2011). Indeed, in the academic world, there is a lot of searching for truth (research) with scientific rules and methods objectively, systematically, and logically. In universities, lecturers use the results of their research as advice in conveying ideas and solving problems in science or social society. The role of dissemination is here as a means to disseminate the results of research that has been carried out and which absolutely must be applied. Therefore, the importance of disseminating the results of research that has been carried out is so that the results of research can be accessed by many people and are also important for the development of the competence of the lecturer himself (Husin & Nur, 2020).

CONCLUSION

The description of the definition stage includes an analysis of system requirements which include a) Information systems can be used as a medium for health-related education, especially those related to noncommunicable diseases; b) Information systems are used to record visits by Posbindu participants; c) Information systems are used to process and display data on risk factors for noncommunicable diseases and information systems process and display information related to healthy campuses. The description of the design stage includes the design of the developed system including the design of the United Modeling Language (UML) using use case diagrams and class diagrams. Database design is done using MySQL database and MySQL Workbench as a Graphical User Interface. Furthermore, the coding stage is carried out using the PHP programming language, the Laravel framework, and the Visual Studio code text editor. The deployment process uses Hostinger web hosting which runs on a Linux operating system server. The description of the development stage includes website content development activities and validation of feasibility test products by health professionals with a feasibility percentage value of 94.07% and a feasibility percentage from participants of 91.44%. The hpu.pinangmasak.com website is obtained as a website-based

NCD screening database and health education in realizing a healthy campus.

REFERENCES

- Ahyadu, N., & Danuri, Z. M. (2011). Perancangan Sistem Manual Menjadi Sistem Komputerisasi Persediaan Barang Pada Ud. Satria Perkasa Semarang Berbasis Obyek. *Jurnal Ilmia Infokami*, 7(1).
- Anita Azmi, R., Rukun, K., & Maksum, H. (2020). Analisis Kebutuhan Pengembangan Media Pembelajaran Berbasis Web Mata Pelajaran Administrasi Infrastruktur Jaringan. *Jipp*, 4(2), 303-314. <https://ejournal.undiksha.ac.id/index.php/JIPP/article/view/25840>
- Bernhardt, J. M., Mays, D., & Kreuter, M. W. (2011). Dissemination 2.0: Closing The Gap Between Knowledge And Practice With New Media And Marketing. *Journal of Health Communication*, 16(SUPPL. 1), 32-44. <https://doi.org/10.1080/10810730.2011.593608>
- Chau, J. P. C., Chung, L. C. L., Wong, R. Y. M., Loo, K. M., Lo, S. H. S., So, T. T. Y., Lau, M. S. W., Yeung, T. H. M., Leung, B. S. F., Tong, M. L., Li, C. Y. N., Kwok, W. W. Y., Thompson, D. R., & Lee, D. T. F. (2012). An evaluation of a web-based diabetes education program designed to enhance self-management among patients living with diabetes. *CIN - Computers Informatics Nursing*, 30(12), 672-679. <https://doi.org/10.1097/NXN.0b013e318261f1d2>
- Desvita, W. R., Awisarita, R. W., Fikri, M., Nurani, H., & Sikumbang, I. M. (2022). Pandemi Covid-19 Screening of Mental Health , Religiosity , and Quality of Life of Pharmaceutical and Medical Students in the Covid-19 Pandemic. *Medical Sains: Jurnal Ilmiah Kefarmasian*, 7(2), 293-300. <https://ojs.stfmuhammadiyahcirebon.ac.id/index.php/iojs/article/view/342>
- Efendi, E., Yosiyana, K., Panggabean, A., & Halawa, I. (2023). Teknologi Sistem Informasi Manual Dan Digital/Multimedia. *INNOVATIVE: Journal Of Social Science Research*, 3, 11-18.
- Fikri, Z. (2022). *Pengembangan Media Komik Mengenai Faktor Risiko Stunting (Nikah Muda, Tablet Tambah Darah, Dan Informasi Stunting) Pada Remaja*.
- Fridayanti, W., & Laksono, B. (2017). Keefektifan Promosi Kesehatan terhadap Pengetahuan, Sikap dan Perilaku tentang Tes IVA pada Wanita Usia 20-59 Tahun. *Public Health Perspective Journal*, 2(2), 124-130.
- Hasanah, U., & Hayati, Z. (2022). Analisis Faktor Risiko Perilaku Merokok Pada Usia Remaja: Literatur Review. *Jurnal Ilmiah Indonesia*, 7(1), 473-483. <http://dx.doi.org/10.36418/Syntax-Literate.v7i1.60292548-1398>
- Hendriyani, Y., Jalinus, N., Delianti, V. I., & Mursyida, L. (2018). Analisis Kebutuhan Pengembangan Media Pembelajaran Berbasis Video Tutorial. *Jurnal Teknologi Informasi Dan Pendidikan*, 11(2), 85-88.
- Husin, H., & Nur, S. (2020). Program Diseminasi Hasil Penelitian Serta Pendampingan Penelitian Dosen Pemula Se-Kalimantan Selatan. *JCES (Journal of Character Education Society)*, 3(1), 78-85.
- Kalsum, U., Nasution, H. S., & Nurwaqiah, I. (2020). Karakteristik Individu dan Penyebab Kematian di Kalangan Dosen di Jambi. *Prosiding SNIP Unja 2020*, 360-369.
- Kaufman, A. R., Dwyer, L. A., Land, S. R., Klein, W. M. P., & Park, E. R. (2018). Smoking-Related Health Beliefs And Smoking Behavior In The National Lung Screening Trial. *Addictive Behaviors*, 84, 27-32. <https://doi.org/10.1016/j.addbeh.2018.03.015>
- Madre, J., Yudi Sukmono, H., & Gunawan, S. (2021). Perancangan Sistem Informasi Berbasis Website Sebagai Salah Satu Media Promosi Pada Perusahaan. *Journal of Industrial and Manufacture Engineering*, 5(2). <https://doi.org/10.31289/jime.v5i2.5594>
- Mardian, R. D., Agoes, S., & Riffany, R. S. (2019). Perancangan Aplikasi Pelaporan Berbasis Android Pada Komunikasi Jaringan Data 4G. *Jurnal FTIK*, 816(1).
- Mertens, J., Lu, Y., Parthasarathy, S., Moore, C., & Weisner, C. (2017). Medical And Psychiatric Conditions Of Alcohol And Drug Treatment Patients In An HMO: Comparison With Matched Controls. *Arch Intern Med*, 163(20),

- 2511-2517.
<https://doi.org/10.1001/archinte.163.20.2511>
- Mezei, A. K., Armstrong, H. L., Pedersen, H. N., Campos, N. G., Mitchell, S. M., Sekikubo, M., Byamugisha, J. K., Kim, J. J., Bryan, S., & Ogilvie, G. S. (2017). Cost-Effectiveness Of Cervical Cancer Screening Methods In Low- And Middle-Income Countries: A Systematic Review. *International Journal of Cancer*, 141(3), 437-446. <https://doi.org/10.1002/ijc.30695>
- Minister of Health of Republic of Indonesia. (2019). *Buku Pedoman Manajemen Penyakit Tidak Menular*. Direktorat Pencegahan dan Pengendalian Penyakit Tidak Menular, Kementerian Kesehatan Republik Indonesia.
- Ministry of Health RI. (2023). *Aplikasi Sehat IndonesiaKu*. <https://link.kemkes.go.id/multi/Links/lists/faqasik>
- Moldovanu, D., De Koning, H. J., & Van Der Aalst, C. M. (2021). Lung Cancer Screening And Smoking Cessation Efforts. *Translational Lung Cancer Research*, 10(2), 1099-1109. <https://doi.org/10.21037/tlcr-20-899>
- Perwira, H. N. (2015). (2015). *Pengembangan Sistem Informasi Perpustakaan Berbasis Web di SMK Muhammadiyah 1 Yogyakarta*. 1-170. http://eprints.uny.ac.id/33984/1/husain_nanda_p.pdf
- Poli, U. R., Bidinger, P. D., & Gowrishankar, S. (2015). Visual Inspection With Acetic Acid (VIA) Screening Program: 7 Years Experience In Early Detection Of Cervical Cancer And Pre-Cancers In Rural South India. *Indian Journal of Community Medicine*, 40(3), 203-207. <https://doi.org/10.4103/0970-0218.158873>
- Purnaningsih, N., Aditya Putra, R., Anggini, A., Husni Tamami, M., & Ashfi Furoida, D. (2022). Efektivitas Penggunaan Website GEKA.id dalam Peningkatan Pengetahuan tentang Pencegahan Seks Bebas Bagi Remaja pada “PIK-R Klorofil” di Kabupaten Kampar. *Jurnal Penyuluhan*, 18(1), 177-184. <https://doi.org/10.25015/18202237679>
- Putri, D. F., & Nurlaila, N. (2022). Analisis Sistem Pencatatan Manual Laporan Keuangan Terhadap Kinerja Akuntan Di Perusahaan Umum Daerah Pasar Kota Medan. *SIBATIK JOURNAL: Jurnal Ilmiah Bidang Sosial, Ekonomi, Budaya, Teknologi, Dan Pendidikan*, 1(6), 763-770. <https://doi.org/10.54443/sibatik.v1i6.90>
- Rahmatuloh, M., & Revanda, M. R. (2022). Rancang Bangun Sistem Informasi Jasa Pengiriman Barang Pada PT. Haluan Indah Transporindo Berbasis Web. *Jurnal Teknik Informatika*, 14(1), 54-59.
- Risianty, E. mei. (2019). Konsep Pemrograman Berorientasi Object (Pbo) Pada Delphi. *Fakultas Komputer*, 18.
- Sanjaya, W. (2013). *Strategi Pembelajaran Berorientasi Standar Proses Pendidikan*. Kencana.
- Sulistyaningsih, S., & Listyaningrum, T. H. (2021). Deteksi Faktor Risiko Penyakit Tidak Menular melalui Pos Pembinaan Terpadu Warga Sehat di Era Pandemi Covid-19. *Warta LPM*, 24(3), 558-570. <https://doi.org/10.23917/warta.v24i3.13125>
- Sumarni, S. (2019). *Metode Penelitian Dan Pengembangan (Research and Development/R&D)*. https://digilib.uin-suka.ac.id/id/eprint/39153/1/SRI-SUMARNI-MODEL-FINAL-HKI_2019.pdf
- Sunarto, & Riduwan. (2017). *Pengantar Statistika Untuk Penelitian Pendidikan Sosial Ekonomi Dan Komunikasi*. Alfabeta.
- Supriati, R., Priyadi, P. R., Sulastri, I., Rizky, A., & Adawiyah, S. A. (2021). Pemanfaatan Teknologi Website Pada Perancangan Sistem Kepegawaian Dalam Mendukung Perhitungan Penggajian Di PT. Herda Sentosa Tangerang. *BEST Journal (Biology Education, Science and Technology)*, 4(2), 28-39. <https://doi.org/10.30743/best.v4i2.4078>
- Surandari, I. (2019). Analisis Penggunaan Website Perpustakaan Kementerian Pendidikan Dan Kebudayaan Menggunakan Model End User Computing Satisfaction (EUCS). *UIN Syarif Hidayatullah*, 1(1).
- Talen, M., Baumer, J., & Mann, M. (2013). *Screening Measures In Integrated Behavioral Health And Primary Care*

- Settings. Springer Science + Business Media.
- Thamrin, C. W., Kaunang, E. D., & Ratag, G. A. E. (2023). Analisis Pengembangan Program Kesehatan Jiwa Masyarakat di Puskesmas Tombulu. *Medical Scope Journal*, 4(2), 178-185. <https://doi.org/10.35790/msj.v4i2.44859>
- Thiagarajan, S. (1974). *Instructional Development for Training Teachers of Exceptional Children: A Sourcebook*. Indiana University.
- Triayomi, R., Wibagso, S. S., Setiahati, I. P., & Sukarman, S. (2023). Analisis Kebutuhan Perancangan Website Sekolah Dasar. *Jurnal Basicedu*, 7(3), 1446-1453. <https://doi.org/10.31004/basicedu.v7i3.5231>
- Universitas Gadjah Mada. (2023). *Health Promoting University Universitas Gajah Mada*. <https://hpu.ugm.ac.id/>
- Waldopo. (2011). Analisis Kebutuhan Terhadap Program Multi Media Interaktif Sebagai Media Pembelajaran. *Jurnal Pendidikan Dan Kebudayaan*, 17(2), 244-253.
- World Health Organization. (2021). *Noncommunicable diseases*.