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Survey of Public Needs on The Design of an Integrated Information System Model for Adolescent, Mother, and Child Health

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KEYWORDS

Adolescent health services; community networks; maternal and child health services; design of application models; integrated health information system.

ABSTRACT

Maternal Mortality Rate (MMR) and Infant Mortality Rate (IMR) in Indonesia are still high, with MMR reaching 305/100,000 live births and IMR at 22.23 per 1,000 live births. Although the government has launched various programs for adolescent, maternal, and child health, there has been no effort to integrate these programs into a comprehensive reproductive health cycle. This study aims to analyze the needs of the community in designing an integrated information system model for adolescent, maternal, and child health. This study used a survey design conducted in Dau, Malang Regency, Indonesia. The population consisted of all women of childbearing age (15-49 years) totaling 945 people, with a sample size of 311 respondents obtained using the Slovin formula. The sampling technique used cluster sampling from 4 RW in Petungsewu Village, and 279 respondents could be processed. The research instrument used a questionnaire, and the data were analyzed quantitatively in the form of frequency distribution. The results of the data analysis showed that the design of the integrated model of adolescent, maternal, and child health has significant potential as the basis for developing an integrated website system. This system not only facilitates comprehensive health education but also strengthens real-time health recording and reporting mechanisms. This study shows that the integration of health education is essential to meet the different information needs of adolescents, mothers, and children. The model successfully identified and categorized these needs, so that the developed website could provide relevant and specific content for each user group.

INTRODCUTION

Maternal mortality rate (MMR), infant mortality rate (IMR), and prevalence of malnutrition among children under five are important indicators of the impact of health development. Government efforts to reduce MMR, IMR, and prevalence of malnutrition have been established as priority programs in health development. Based on data from SUPAS, MMR in 2015 reached 305/100,000 live births, while IMR in 2017 was recorded at 24/1,000 live births. In 2019, the prevalence of malnutrition reached 16.29%. East Java health profile data shows that the maternal mortality rate in 2020 increased from 2019 to 10.53%, with a stunting percentage of 12.4%. In Malang District, the MMR was recorded at 74/100,000 live births and the percentage of stunting was 12.1%. Although the government has launched various programs to address this issue, there are still challenges in integrating these programs into a comprehensive reproductive health cycle.

One of the steps that the government has taken in reducing AKI and AKB is to increase public understanding of pregnancy and reproduction starting from adolescence. The operational strategy through the Puskesmas is an Essential Reproductive Health Service Package that reaches the entire community, including promotive, preventive, curative and rehabilitative aspects. Some of the programs related to adolescent reproductive health that have been running include: Adolescent Care Health Services, Adolescent Posyandu, etc. Maternal health programs: Integrated ANC, pregnant women classes, P4K programs, etc. Meanwhile, child health programs: *Posyandu* for toddlers, classes for mothers under five years old, etc. The program is very helpful in improving the health status of mothers, babies and toddlers. But unfortunately, there has been no effort to integrate health programs that can integrate into one health cycle throughout the female reproductive cycle.

Midwives contribute to the decline of AKI and AKB as female companions. Midwifery care focuses on holistic prevention and health promotion. Women-centered guidance, monitoring and education are provided continuously throughout their reproductive cycle, according to their wishes and respecting their choices.6 Based on this philosophy, the midwife profession can actively contribute to efforts to optimize the health of adolescents, mothers and children.

Government programs that have been running in improving the degree of public health should need to be improved through continuous coaching, mentoring and monitoring. As a solution to adolescent, maternal and child health programs that seem fragmented, it is necessary to develop a program as a media for information, recording and reporting of adolescent, maternal and child health that is integrated throughout the cycle of women's reproductive health, the implementation of which can be monitored by relevant stakeholders. With this integrated system, it can make it easier for health workers to monitor and evaluate regularly and on target.

Implementation steps in system development: requirements analysis, system design, system building, testing, and final product.2 The development of this program is planned in 5 stages, so the first step is to identify and analyze the needs of the community and stakeholders, followed by the second stage, namely formulating a design of an integrated application model for adolescent, maternal and child health. The purpose of this study is to describe the design of an integrated model for adolescent, maternal, and child health as the basis for creating an integrated system (website) about education, recording, and reporting of adolescent, maternal, and child health.

METHOD RESERACH

The research design uses the survey method. The research was conducted in Dau, Malang regency, Indonesia. The population is all Women of Childbearing Age (15-49 years old) totaling 945 people. The sample size using the Slovin formula e=0.05, 311 respondents were obtained. Sampling cluster sampling technique from 4 RWs in Petungsewu village. The number of samples that can be processed is 279 respondents. The research instrument uses a questioner. The data was processed and analyzed quantitatively in the form of frequency distribution.

RESULT AND DISCUSSION

Characteristics of Research Respondents

Table 1.Characteristics of Respondents

No	Characteristic	n	%
1	Age		
	12-24 years	68	24,38
	25-43 years old	178	63,80

No	Characteristic	n	%
	44-60 years old	33	11,82
	Sum	279	100,00
2	Education		
	Elementary school	115	41,22
	Middle School	77	27,59
	High school	64	22,94
	College	23	8,25
	Sum	279	100,00
3	Employment		
	Housewife	195	69,89
	Laborer	23	8,24
	Private employees	26	9,31
	Civil servants	1	0,35
	Student	25	8,96
	Other	9	3,22
	Sum	279	100,00
4	Marital status		
	Marry	247	88,53
	No/ unmarried	32	11,47
	Sum	279	100,00
5	Parity (Total Married)		
	0	47	16,84
	1	94	33,69
	2	120	43,01
	>=3	18	6,45
	Sum	279	100,00

Based on the table above, it can be seen that the majority of survey respondents are aged 25-43 years (63.80%), have an elementary education (41.22%), work as an IRT (69.89%), are married (88.53%), with a parity of 2 (43.01%).

Table 2. Use of Health Apps

Use	n	%
Yes	89	31,90
Not	190	68,10
Sum	279	100

Only 31.90% use health applications that already exist in the community. The rest have never used it.

Table 3. Health Apps Used

No	Application Type	n	%
1	National health insurance	10	11,23
2	Hallodoc app	42	47,10
3	Google	8	8,98
4	JMO app	1	1,12
5	JKN app	4	4,49
6	Click Doctor app	2	2,20
7	Samsung Health app	1	1,12
8	PHC app	1	1,12

No	Application Type	n	%
9	Primatu app	1	1,12
10	KIS app	1	1,12
11	Flo app	4	4,49
12	YouTube	5	5,61
13	One Healthy app	2	2,20
14	Meet You app	1	1,12
15	Medi-call app	1	1,12
16	Asian Parents app	1	1,12
17	Reproductive Health app	1	1,12
18	Allodokter app	2	2,20
19	Pregnancy app	1	1,12
	Sum	89	100,00

Of the 31.90% who used the application, the most used the Hallodoc application (47.10%), followed by BPJS online (11.23%). The rest use other apps to support their health.

Table 4. Important features that must be present in the Integrated Adolescent, Maternal, and Child Health Application

No	Kind	n	%
1	Health articles	186	66,68
2	Educational Videos	75	26,89
3	Infographic	4	1,43
4	Podcasts	9	3,22
5	Chat with a doctor	4	1,43
6	Booking appointment (doctor's appointment)	1	0,35
	Sum	279	100,00

Based on the opinions of the research respondents, they stated that the important feature that must be present in the integrated application of adolescent, mother, and child health is health articles (66.68%), followed by educational videos (26.89%).

Table 5. Frequency of use of unified applications

No	Frequency	n	%
1	Every day	43	15,4
2	Several times a week	62	22,22
3	Once a week	23	8,24
4	Several times a month	52	18,63
5	When needed	99	35,48
	Sum	279	100,00

Most respondents said that the frequency of using integrated applications is carried out when necessary (35.48%).

Table 6. Availability of Application Accessibility

No	Amount of Fees	n	%
1	Free of charge	235	84,22
2	IDR 5,000 - IDR 10,000 per month	24	8,60

No	Amount of Fees	n	%
3	IDR 11,000 - IDR 20,000 per month	7	2,50
4	More than IDR 20,000 per month	13	4,65
	Sum	279	100,00

Most respondents said that when using the application with a fee, they would like accessibility to be free of charge (84.22%).

Table 7. Application Design View

No	App View	n	%
1	Simple and easy to use	171	61,29
2	Modern and attractive	29	10,39
3	Informative and educational	79	28,32
	Sum	279	100,00

The appearance of the application design must be simple and easy to use (61.29%), informative and educational (28.32%), and modern and attractive (10.39%).

Table 8. Media developed in the App

No	Application Type	n	%
1	Article	70	25,09
2	Video	195	69,90
3	Infographic	5	1,79
4	Podcasts	9	3,22
	Sum	279	100,00

The majority of respondents agreed that the media developed in the application was in the form of educational videos (69.90%).

Table 9. Access Information

No	Access Information	n	%
1	Through categories	87	31,18
2	Through search	192	68,82
	Sum	279	100,00

Access to information in the application can be reached through relevant keyword searches (68.82%).

Table 10. How to Communicate with Healthcare Workers

No	Communication Media	n	%
1	Chat	191	68,46
2	Video calls	36	12,90
3	Discussion forums	52	18,64
	Sum	279	100,00

In the application developed, the majority of respondents wanted to be able to communicate directly with health workers through the chat feature (68.46%).

Table 11. Interest in the Use of Integrated Applications for Adolescent, Maternal, and Child Health

No	Interest	n	%
1	Yes	272	97,49
2	No	7	2,51
	Sum	279	100,00

Almost all respondents expressed interest in using an integrated application for adolescent, mother, and child health (97.49%).

Table 12. Suggestions and Inputs in Designing an Integrated Application for Adolescent, Maternal and Child Health

No	Suggestion
1	Easy-to-use app design
2	Providing accurate and reliable health information
3	Facilitate the consultation process with a doctor
4	Simplify the healthcare booking process
5	Maintaining the security and privacy of user data
6	Free and attractive

The table above is a summary of input and suggestions from survey respondents of 279 people about the development of adolescent, maternal and child health applications. Based on quantitative data analysis, it can be concluded that the community needs the development of an integrated application for adolescent, mother, and child health, as a source of accurate health information, and makes it easier for them to get health services through doctor chat facilities (health workers). They are interested in using information media in the form of videos, with accessibility at no cost. The design of the developed application is as simple and easy to use as possible, informative and educational, and attractive.

CONCLUSION

The results of this study show that the design of a health integration model for adolescents, mothers, and children has significant potential as a basis for the development of an integrated website system. This integration not only facilitates comprehensive health education but also strengthens the mechanism for real-time health recording and reporting. First, the need for integrated health education is very crucial considering the difference in information needs between adolescents, mothers, and children. Adolescents need information about reproductive and mental health, while mothers need knowledge about prenatal and postnatal care, as well as child health focused on physical development and immunizations. This model successfully identifies and categorizes these needs, so that the developed website can provide relevant and specific content for each group of users. Second, the integrated aspect of health recording allows for more accurate and structured data collection. With a system that combines data from various groups, health trend analysis can be carried out more effectively. This supports data-driven decision-making by healthcare providers and other stakeholders. In addition, centralized recording minimizes data duplication and increases efficiency in health information management.

Third, integrated health reporting provides convenience in monitoring the health status of individuals and communities. This reporting feature allows users to report health conditions at regular intervals, which can then be analyzed to detect potential health problems early. In addition, integrated reporting data can be used by health agencies to design more targeted intervention programs. The implementation of this model in the form of an integrated website also offers advantages in terms of accessibility and user experience. Users can easily access health information, record-keeping, and report on their health conditions through one intuitive platform. This is expected to increase the active participation of users in maintaining the health of themselves and their families. However, there are several challenges that need to be overcome in the development of this system. First, data security and privacy are very important aspects considering the sensitivity of health information. The system must be equipped with strong security protocols to protect user data from unauthorized access. Second, limited internet access in some areas can be an obstacle in the maximum use of this website. Therefore, alternative solutions such as lightweight mobile apps need to be considered to reach users in different locations.

REFERENCES

Noviani amalia, Sari M, Septina H rahma, Hardianto. Maternal and Child Health Profile 2020. Vol 53.; 2020.

Dwitama AJ, Hayuhardhika W, Putra N, Pramono D. Development of a Web-Based Community Complaint Service Center (P3M) Application Case Study: inas Communication and Informatics of Sidoarjo Regency. J Developer of Inf Technology and Computational Science. 2019; 3(9):8463-8471. http://j-ptiik.ub.ac.id

Bappenas RI. Executive Summary: National Medium-Term Development Plan (RPJMN) 2020-2024. Bappenas RI; 2019.

Ministry of Health of the Republic of Indonesia. Results of Basic Health Research in 2020. Vol 53.; 2020.

East Java Provincial Health Office. East Java Province Health Profile 2020.; 2021. www.dinkesjatengprov.go.id.

Ramadani, N., Duri, I. D., Gayatri, N. K. U. N., & Arifin, I. (2022). Analysis and Design of Information System for Maternal and Child Health Programs at the West Ring Health Center of Bengkulu City in 2021. Imelda Scientific Journal of Health Recording and Information (JIPIKI), 7(1), 35-47.

Pratiwi, J. D., & Rokhman, N. (2017). Development of Web-Based Maternal and Child Health Information System Input at RSKIA Bhakti Ibu Yogyakarta. Journal of Vocational Health, 1(2), 81-86.

Ministry of Health, R. I. (2020). Action Plan for Public Health Programs 2020-2025. Directorate General of Public Health Ministry of Health Year, 2.

Jati, S. P., Budiyono, B., Mustofa, S. B., Sriatmi, A., Martini, M., Dewanti, N. A. Y., ... & Effendi, S. Integrated Maternal and Child Health Planning Module Integrated with SPM and PIS-PK.

Kurniadi, A., Ernawati, D., Mubarokah, K., & Setiono, O. (2023). Development of the Jagabunda Application as Assistance for Pregnant Women in Efforts to Reduce Maternal and Infant Mortality. Journal of Vocational Health, 8(1), 37-45.