

Digital Media-Based Nutrition Health Communication Model

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Abstract— The rapid development of information and communication technology impacts many fields, one of which is healthcare. Healthcare information can be delivered according to the needs of the public with more convenient services. Thanks to the developments of digital media. This paper aims to develop a model for digital communication media in the field of nutrition, in addition, to support the government movement of people's healthy lifestyle. The observation method of public response was employed. Respondents ($N = 44.443$) who visited digital media were then observed based on their activities while visiting media. Public response was seen from the web statistics of the digital media. Digital media was developed by involving nutritionists. A literature study on relevant data was conducted to support research data. The literature study collects secondary data through research journals and official information from related institutions or organizations. The results of this study indicate the potential of digital media as a medium of health communication. Media actors can use the models to create similar digital media to convey healthcare information to the public.

Keywords— healthcare communication, digital media, communication model, digital media literacy

I. INTRODUCTION

The rapid development of information and communication technology impacts all fields, one of which is the health sector. Changes in development that lead to digital technology make health information data delivered according to consumer needs with new and more convenient services [1].

This new phenomenon is called digital health, which is a cultural transformation that provides digital and objective data that can be accessed by health care providers and consumers so that they have the same level of democratic care decision-making [2].

Technological innovations in the health sector make it possible to provide care, information, and support to consumers wherever and whenever they need it. This innovation will also reduce the communication distance between consumers and health care providers [1].

Based on interviews with health experts, health technology innovations can meet five priority needs: increasing consumer awareness of their conditions, closing the communication distance between consumers and health service providers that optimize consumer care, and

identifying and providing services that suit consumers' needs, build new care models that enable consumers to obtain care most conveniently and cost-effectively, and improve decision-making by consumers and health care providers [1].

Some examples of digital media that provide information and health services by doctors in Indonesia are Alodokter, DokterSehat, and Halodoc. These media provide curative and rehabilitative health services while supporting the healthy community movement (GERMAS) media that are preventive in nature and change lifestyles to a healthier direction by providing information and services that are accountable, valid, and comprehensive.

One of the preventive activities and lifestyle changes that need to be considered is daily nutritional needs and physical activities such as exercise. Providing nutrition education to the public requires not only the right content but also requires the suitable media. The education planned in this research is website-based education and social media. Based on data from the Central Statistics Agency in 2016, individuals who use the internet to find sources of information are around 50.09% [3]. This figure is much higher than individuals who read newspapers or magazines (17.66%) and listen to the radio (18.55%) to find sources of information [4]. Data from We Are Social in 2017 shows that with user growth reaching. The average Indonesian spends up to 8 hours 51 minutes accessing the internet. The internet provides unlimited resources for people to use widely [5].

Looking for information through digital media on the internet is a behavior that is often done by people today [6] because of the availability of easy and fast access [7].

Based on these facts, communication media to change people's lifestyles towards a healthier and more accessible direction is needed. This study aims to produce a digital media-based health communication model that can be used to support government programs in the health sector, namely the Healthy Living Community Movement (GERMAS).

II. MATERIAL AND METHOD

Digital information media that are widely available are information media to cure or treat a disease, while digital information media that educate the public about the importance of healthy lifestyle changes are not yet available. Meanwhile, with advances in information and

communication technology, people are straightforward to access information. This advancement encourages researchers to provide accountable, valid, and comprehensive nutrition information media from nutritionists to appropriate nutrition education media.

In the 2010s, digitization of health services was unavoidable, so that health knowledge continued to multiply. Consumers quickly access information, but they do not know which information is correct and appropriate. On the other hand, advances in technology and information in the health sector are not matched by the skills of health service providers to these advances [8] [9] [10].

Similar studies also show that in the 21st century, the number of patients with chronic conditions and requiring high treatment costs increase with increasing life expectancy, but the World Health Organization (WHO) states that there is a reduction of around 4.3 million world health workers worldwide world. This limitation allows the hardware and software revolution to occur in health services [11].

Advances in information technology and health will also change health services. In traditional health services, consumers are not involved in their health status and disease management. Health workers have complete responsibility for the treatment process and its consequences. Consumers depend entirely on the processes, infrastructure, information, and health workers' decisions and systems. This dependent drives consumers today to use disruptive technology to deal with the health problems they experience [2].

People today feel they have to play an active and equal role in making decisions about their health status. They actively seek other alternatives to deal with the health problems they experience, gather information from others who have experienced the same thing, and make decisions and determine the impact of treatment on their lives [12]. Further information on traditional and modern health services can be seen in Table 1 [2].

TABLE I. DIFFERENCES IN TRADITIONAL AND MODERN HEALTH SERVICES FOLLOWING DIGITAL HEALTH TRANSFORMATION

Traditional medicine	Modern medicine
Point-of-care is the clinic or lab	Point-of-care is the patient
Based on populations	Based on the individual
Hierarchy	Partnership
Prescriptions and orders	Collaboration
Data owned by institutions	Data owned and shared by the patient
Individual experience dominates	Limitless data analyses
Physicians as authority	Physicians as guides
Ivory tower	Social media
Expensive	Costs driven down by Moore's law

The development of information and communication technology innovations also allows health workers and the community to share the burden, choose the proper treatment, and bear the consequences. In addition, the repetitive nature of work for health workers can be eliminated so that they can focus on treating patients by providing empathy, social care,

and the human touch that is difficult to replace with technological advances [22].

Research supporting advances in information and communication technology in the health sector is one by [13], which describes how adults with cancer fulfill their communication needs regarding exercise and nutritional needs using various digital communication channels. This 3-year study studied 1000 posts from an online forum focused on providing support to adults with cancer.

The similarity of previous research with the research to be carried out is that previous research only stops at the text (writing). It is the same as one of the outputs that the researcher will carry out. When the research stops at the text (writing), the area of access to knowledge will also be limited to certain circles, especially academics who have or often access to academic needs. The difference in this study is that when the text writing is converted or applied into audio-visual media and published through online media (digital media platforms), especially in the current era, it can be an alternative to provide access to knowledge to a broad audience and become a practical and effective communication model. Easy to understand.

The health communication model is carried out through several stages, starting from the analysis stage, strategic design, message development, production stage, implementation, monitoring stage, impact evaluation stage, and sustainable planning stage [14].



Fig. 1. Health Communication Model [25].

The non-participatory observation method was used to evaluate respondents' responses. Respondents ($N=44,443$) who visited digital media were then observed based on their activities while visiting the media. Respondents' responses were seen based on web statistics from the digital media used. Digital media on health nutrition was developed by involving nutritionists.

Univariate analysis was conducted to analyze variable data by distributing frequency and user characteristics. Univariate data from this study were age, level of education, type of work, and motivation to seek information through digital media. Categorical variable data will be presented in the form of frequency and percentage. Continuous variable

data will be presented in the form of mean and standard deviation (S.D.).

III. RESULT AND DISCUSSION

A digital media-based health communication model was developed to prepare a health communication model adapted from Wahyudin [14].

A. Analysis Stage

The initial stage in planning health communication is to analyze the audience receiving the message. Successfulness of health communication depends not only on the sender of the message but also on the reception of the communicant. In communication activities, the analysis of the recipient of the message becomes essential. Recipient analysis helps message compilers to design audience mapping.

The socio-demographic profile refers to the Indonesian Demographic and Health Survey [15], which shows the median age at first marriage for women aged 25-49 is 20.4 years. The median age at first marriage for men aged 25-54 years is 24.3 years. Based on the Central Statistics Agency data, the marriage rate in Indonesia reaches around 1.9 million couples annually [16], with an average marriage age of 21-30 years [17].

The government has provided health education through health centers such as general health education, dental health, psychology, maternal and child health, and nutrition as a mandatory procedure before the couple gets married. Nevertheless, this is done only once, before they got married. The message intended in this health communication is aimed at helping young couples to have healthy dietary habits [18]. This is done so that these young couples can give birth to a healthier and smarter generation for the nation.

B. Strategic Design

In this stage, the message's author arranges the goals and targets to achieve health communication and promotion. This stage also identifies various potential communication barriers that may occur.

With the rapid development of the internet in Indonesia and supported by the construction of the Palapa Ring project by the government, internet users have increased from around 132.7 million in 2016 to 143.26 million, with a total population of 262 million [19]. This makes the internet the primary source for people to find sources of information, one of which is health information.

Several digital-based media have potential as communication media in the health sector, such as interactive computer programs, mobile phones, computers, interactive television, and the internet based on websites and emails [18] [20] [21]. Website-based media was chosen because of its broad reach.

Web-based internet, in particular, has changed health communication in several ways. Dissemination of website-based health information can reduce distribution costs for preparing and developing nutrition and health communications and reach all circles [22] [23]. Web-based information can also be personal and allow remote counseling [24].

Nowadays, people can easily access all kinds of information with the help of the internet. This ease of access is inversely proportional to the availability of information facilities on the internet that provide credible and accurate education about nutrition and health for families of young couples [25]. This online-based nutrition and health education have the advantages of being a cheap, fast means of information and can be accessed by anyone [24].

C. Message Development and Production Stage

Messages are an essential component of health communication. Messages are designed based on the information needs of the target audience. Wilson's model of search behavior and fulfillment of information needs are divided into three characteristics [26]: information needs, inhibiting factors for information seeking, and information-seeking behavior. The need for information will encourage someone to take action to find information about related information. This need can be driven by motivation within the individual, such as desire, trust or distrust, fear, and hope [27].

The motivation for seeking information is to seek answers, reduce ambiguity, and seek understanding [27]. Information seeking is a complex process consisting of social, communicative, and interactive behavior [28].

Information-seeking behavior by Wilson [29] is described as a broad concept that includes a person's activities in identifying information needs for himself and seeking information in specific ways and using or transmitting that information. Information-seeking behavior can occur if there is access to message senders (informants) formally or informally, personally, or massively through mediation [29].

Based on this analysis, messages are prepared to provide information about nutrition and health for families, such as healthy menus for families, pregnancy, breastfeeding mothers, breast milk (ASI), complementary foods for breastfeeding, and child development.

D. Implementation and Monitoring Phase

This stage monitors the effectiveness of the communication carried out. Some of the results presented below are data that have been successfully collected until July 2021 through the <https://gizigo.id> website.

The website page users were 44,433 users from 13 October 2018 to 10 July 2021 to access information about nutrition and health for families, 44,230 of whom were new users. The total number of page views is 76,861 times, with many new users (89.6%) than users who revisit this platform (10.4%).

From the number of visits, it can be seen that users (organic traffic) who obtain information about the website through search engine optimization (SEO) are more significant than users (direct traffic) who make direct visits to the online address of this platform through a browser. Users who already know about this online platform will usually return to this page (returning users) (chart 2).



Fig. 2. User acquisition data by the number of pages visited in the last two years

E. Impact Evaluation Stage

In this stage, message writers evaluate health communication activities carried out through digital-based media. Evaluation can be done by looking at the results of search engine analysis so that the suitable health communication model through digital media is to create content that answers the audience's needs.

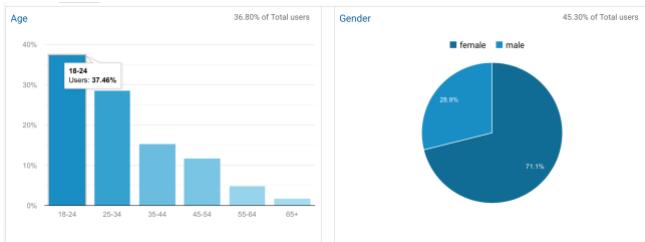


Fig. 3. User acquisition data by age range and gender over the last two years

Chart 3 shows that most visitors from the website are women, with a percentage of 71.1%. This number is higher than male visitors, who are only 28.9%. Most of the visitors were aged 18-24 years with a percentage of up to 37.46%, followed by the age range of 25-34 years (28.62%). The age range above 65 years is the lowest number of visitors, with only 1.82%. Based on the percentage, the most extensive access to this online platform is Indonesia compared to other countries, with 43,166 users (97.07%). The United States followed them with 382 people (0.86) and other countries in the Asia Pacific. Most users come from the same country as the country where this website page is published and managed.

In addition to article information about nutrition and health for families of young couples, this platform also provides consulting services with nutritionists if the users want recommendations about nutrition and health that are valid and credible with user-friendly usage (easy to use).

F. Continuous Planning Stage

Health communication activities through digital-based media that have been carried out can guide further communication activities. The results obtained to become a consideration for the preparation of further health communication activities. Health communication activities through information technology-based media maximize the potential of search engines to disseminate information (search engine optimization).

Based on the analysis that has been given, the form of a health communication model that can be proposed is as follows.

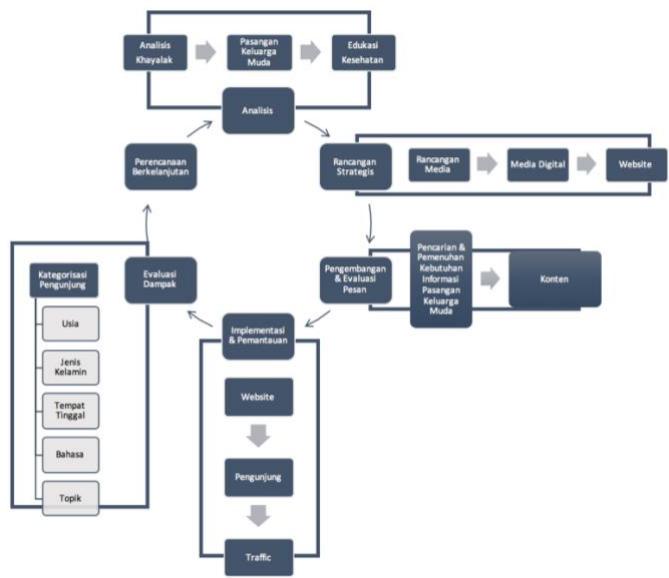


Fig. 4. Digital Media-Based Health Communication Model

IV. CONCLUSION

Based on the data that has been obtained, educational innovations in the field of nutrition and health are urgently needed to more easily reach a wider audience who need valid and credible information about nutrition and health. The results of this study indicate the potential of digital media as a medium of health communication. Media practitioners can use a similar model to create similar digital media to convey health information to the public. Further research is needed on the effectiveness of this digital media communication model to educate young couples compared to conventional methods such as printed media.

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