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User Perception of Hydrated Website Prototype for Dehydration Prevention: Quantitative Descriptive Study

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ABSTRACT

Background: Body fluid balance or hydration status is often considered unimportant, but scientific facts show that a lack of fluids, even just one per cent, impacts cognitive decline. So, technology-based efforts are needed, such as an easily accessible website to monitor hydration status and maintain good hydration for the community. This research has described the public's perception of a hydrated website prototype for dehydration prevention

Method: This research design is quantitatively descriptive, with a population of 114 respondents, using a purposive random sampling technique. The research variables, namely User perceptions of the Hydrated Website Prototype, include user skills, ease of access, appearance design, completeness of content, and application benefits. The instrument uses a questionnaire that refers to variables/sub-variables, and data analysis is done using a frequency distribution table.

Result: Public perception in the good category is 99.1%, including the perception of website prototype users being hydrated to prevent dehydration based on the level of user proficiency in using a smartphone or laptop with the advanced or able-to-use category of 77.2%, ease of access in use with the easy category of 59, 6%, the appearance of the design and completeness of the contents of the website prototype in the exciting category each amounted to 64%. Meanwhile, regarding usability, the hydrated website prototype was very useful at 59.6%.

Conclusion: This research concludes that user perceptions of the hydrated website prototype for dehydration prevention are good and accepted by the public.

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INTRODUCTION

Dehydration is a serious health problem if not treated properly (1) (2). This condition can lead to emergency complications that risk causing hypovolemic shock and death (3)(4). Even though there are established treatment guidelines, lack of monitoring and low compliance with hydration protocols are significant problems in health facilities (2), especially for the general public who do not know about first aid management of dehydration (5).

Dehydration is a condition where the body loses many fluids (6). Cases of dehydration due to lack of fluids in the body are often associated with various diseases such as diarrhea and typhoid fever experienced by people, especially children, and teenagers (7), as well as other conditions such as pregnancy (8) and old age (9). Globally, every year, around 2.5-5 billion cases of diarrhea occur in children under the age of five. This condition has tended to stabilize in the last two decades (10) (11). As many as 1.3 million child deaths in Africa and Southeast Asia occur

due to acute gastroenteritis, including diarrhea, which is also associated with signs of typhoid disease. Diarrhea incidents occur in developing countries with limited health resources (11), including Indonesia. According to the 2023 Indonesian Health Survey (SKI), the prevalence of diarrhea in Indonesia for all age categories is 877,531 cases. West Java Province had the highest number of cases, with 156,977 cases; East Java had 130,683 cases, and Central Java had 118,184 cases. Meanwhile, South Kalimantan province had 13,299 cases, or around 1.5% of diarrhea cases nationally (12). The 2020 South Kalimantan Provenance Basic Health Research (Riskesdes) report based on 2018 data shows that diarrhea cases in South Kalimantan were around 23,915 cases, where Banjar district was ranked second with 3,317 cases after Banjarmasin city with 4,011 cases. The results of random interviews and surveys from December 2023 to January 2024 of 30 people consisting of teenagers and adults admitted that all of them had experienced diarrhea and failed to focus during hot conditions, especially when carrying out learning activities. Most of them (83%) said they were experiencing dehydration but were not accurate in assessing the level of dehydration they were experiencing, so they thought it was normal and no special treatment was taken.

Diarrhea and typhoid fever cause an increase in a person's body temperature. This condition causes dehydration. This will have an impact on health and even cause decreased consciousness, hypovolemic shock, and even death (3). Dehydration can also occur due to the influence of hot and extreme weather (14). Fluid loss of more than 2% of body mass has a negative impact on cognitive performance, such as memory, attention, and perception (9). In fact, research by Benton et al., (15) explains that even if you lose 1%, and research by Merhej (16), 3% of body fluids will still have an impact on cognitive decline and even confirms that water is a source of nutrition. Conditions like this should not occur, and they will affect people in their productive years, such as teenagers (students and students) and adults. Research by Tung et al., (17) explains the importance of water and hydration status in improving the cognitive abilities of teenagers so that they get tired quickly during the learning process.

Efforts to overcome the problem of dehydration, especially as a first step in the ability to detect the level of dehydration for the community, need to be considered and carried out independently and within the family. Good knowledge about detecting dehydration levels can improve the family's ability to carry out family tasks, starting from recognizing health problems, making appropriate decisions regarding the condition of sick families, caring for sick relatives, modifying the environment that has an impact on health conditions, and most importantly being able to utilize facilities health services. The activities carried out include health education directly or through digital media such as WhatsApp to increase understanding about hydration, as per research by Buntarlan et al., (18). The importance of hydration status for health is also conveyed through campaign actions by nutrition experts in Europe (4). However, these efforts sometimes still cause various obstacles because they cannot reach the community all the time, so other innovations are needed, such as the use of website media regarding detecting dehydration levels and hydration management, which currently has not been done much to reach the needs of the wider community.

This research will develop a website specifically designed to help prevent dehydration and manage fluid needs in general and based on age groups, which is helpful as an early warning of dehydration status, integrated education for the public and health workers, and efficient in the early hydration management process. In the initial stages of this research, we will use a hydrated website prototype. This website design discusses dehydration management, which will later be developed into an official website and/or application-based. So, this research aimed to evaluate user perceptions of a hydrated website prototype for preventing dehydration.

METHOD

This research design is quantitatively descriptive, with a population and sample of 114 respondents, and was conducted using a purposive random sampling technique. The inclusion criteria for respondents were willingness and the use of electronic devices such as smartphone and laptops to access the prototype website link and register and use it. The research variable, namely user perception of the hydrated website prototype, includes user skills measured by the ability to register and fill in all content on the hydrated website prototype; ease of access is calculated based on the respondent's opinion in utilizing the hydrated website prototype. The appearance design, content completeness, and application benefits are also measured based on respondents' views. The instrument uses a questionnaire that refers to variables/sub-variables with data analysis using a frequency distribution table. The questionnaire draws descriptive conclusions regarding user perceptions of the hydrated website prototype for preventing dehydration. This research series has been declared feasible from the ethical feasibility test or ethical clearance Number 033/KE/YBIP/V/2024.

Ethical Approval

Can this editorial be the same? If yes, please match it because the advice is good. If you are not permitted to use this editorial, then the following is from us: "All sources referenced in this article use quotations from relevant articles and book sources. All sources are cited by including the author's name and included in the bibliography section.

RESULTS

Respondent Characteristics

The characteristics of respondents in this study consist of age, highest level of education, employment, and general status, as shown in the following table:

Table 1. Characteristics of Respondents Perceptions of Users of the Hydrated Website Prototype for Dehydration Prevention (n=114)

Karakteristik	N	%
Age		
10-18 Years (Teenagers)	27	24
19-59 Years (Adult)	87	76
Last education		
High school/equivalent	96	84,2
Diploma	12	10,5
Bachelor	1	0,9
Masters	5	4,4
Work		
Not yet working	96	84,2
Civil servants	1	0,9
Private	17	14,9
General Status		
Student/Students	96	84,2
Public	18	15,8

Based on Table 1, it can be concluded that the majority of respondents were aged 19-59 years or the youth category according to the age range of the Ministry of Health, 76%. The last level of education was at high school/equivalent level; 84.2% had not worked, with status as student/college student with 84.2% respectively.

User Perceptions of a Hydrated Website Prototype for Dehydration Prevention

Categories of User Perceptions of Website Prototype Hydrated for Preventing Dehydration in general as in the following table:

Table 2. Frequency Distribution of User Perception Categories of Website Prototype Hydration for Dehydration Prevention (n=114)

Variable	N	%
Good	113	99,1
Moderate	1	0,9
Poor	0	0

Based on Table 2, almost all respondents expressed an excellent perception, or 99.1%, regarding the hydrated website prototype for preventing dehydration. Specifically, the frequency distribution of sub-variable categories of users' perceptions of hydrated website prototypes for preventing dehydration (n=114) is as shown in the following table:

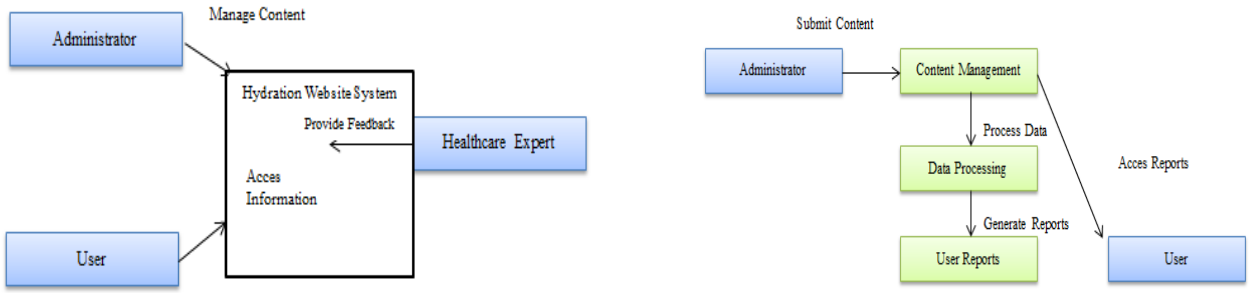
Table 3. Frequency Distribution of Categories of Sub Variables Perceptions of Users of Website Prototypes of Being Hydrated to Prevent Dehydration (n=114)

Sub Variable	N	%
User skills		
Very possible	24	21,1
Can	88	77,2
Can't	3	1,8
Ease of access or use		
Very easy	46	40,4
Easy	68	59,6
Display design		
Very interesting	34	29,8
Interesting	73	64
Less attractive	7	6,1
Completeness of content or contents		
Very Complete	37	32,5
Complete	73	64
Incomplete	3	3,5
Benefits of a hydrated prototype or application		
Very helpful	68	59,6
Beneficial	43	37,7
Quite Useful	3	2,6

Based on Table 3, it can be concluded that the majority of respondents' perceptions regarding the perception of hydrated website prototype users to prevent dehydration are based on the user's skill level in using a smartphone or laptop, with the canned category being 77.2%, the majority of ease of access in the easy category being 59.6. The appearance design and completeness of the contents of the website prototype were considered attractive by 64% each. Meanwhile, in terms of the benefits of a hydrated website prototype, it is considered very useful by 59.6%.

Overview of the Hydrated Website Prototype

The context diagram is a description of the form, input, and output of the system, and the data flow diagram as a process in the application is as follows:



1 2

Figure 1 Context diagram (1) and flow diagram (2) of a hydrated website

DISCUSSION

Respondents' perceptions of the hydrated website prototype were generally good. Meanwhile, specifically for each sub-variable related to the level of user proficiency in using a smartphone or laptop, ease of access, display design, and completeness of content, it is stated that it is good, easy, and attractive. Meanwhile, in terms of usefulness, it is said that it is beneficial. All sub-variables generally get a positive assessment, which indicates that this prototype has met user expectations.

The level of user proficiency in using the application via a smartphone or laptop is an essential aspect in ensuring the successful use of the hydrated website prototype. Data shows that the majority of respondents are young adults who fall into the Gen Z category, with an average age of 19.6 years with a high school/equivalent education. According to Lubis & Handayani (19), generation Z (born between 1995-2012) is known as a generation that has high abilities in utilizing digital technology, including smartphones and laptops. This is also discussed in Wahyuni & Sukriani (20) research, in which this generation also tends to use websites as the primary source for searching for information. The high level of skill of Gen Z users in utilizing technology is the main supporting factor in the successful use of this website prototype.

Apart from user proficiency, ease of access related to the use of hydrated website prototypes is also considered easy and even very easy for users. This was a critical factor in the acceptance of the hydrated website prototype. Knowledge about using a smartphone or laptop and habits in using applications are supporting factors for easy access to hydrated website prototypes. Another factor, namely the availability of a strong and stable internet connection, also plays a vital role in this website being accessed at any time if the user needs it. Al-Daihani's (21) research concluded that knowledge of using smartphones must be mastered by a person so that it does not become an inhibiting factor in searching for information and using applications. Research by Oulasvirta et al., (22) and Oh et al., (23) states that the habit of using applications makes a person skilled in utilizing various application-based technologies. Wiegers et al. research (24) on the impact of easy access to website-based health services in increasing satisfaction and ease of coordination between consumers, health workers, and the government.

Skills in using applications and robust internet access will only be meaningful if they are balanced with the need and intention to use an application. So developers need to make their branding and appeal to the hydrated prototype, such as an attractive design. The appearance design of a hydrated website prototype plays an essential role in attracting user attention. The majority of respondents stated that the website design was attractive. This shows that visual elements greatly influence users' interest in continuing to use the website. Good design, supported by the choice of colors such as blue, white, green, and black, gives an impression that is in line with the hydration theme and is closely related to meeting fluid needs. Research by Suh et al., (25) and Bitrian et al., (26) explains that appropriate design and reasonable layout of an application can significantly increase user engagement. Apart from that, choosing the right color according to the central theme has an impact on improving the attention of users or consumers (27)(28). So, the design elements in this prototype succeeded in facilitating a pleasant user experience, which increased its use. Itt research (28) shows that good quality health websites can make users trust and feel happy.

This is in accordance with the main aim of making this hydrated website prototype for monitoring dehydration status and hydration management for users, especially the public. So, the content and completeness of the content must be considered and completed in accordance with evidence-based scientific developments. Respondents assessed the completeness of the contents of the website prototype as good. Respondents reported that the information provided covered essential aspects of hydration, including knowing the level of dehydration and its management. This information is a fundamental basis for users to understand the signs of dehydration and the steps that need to be taken to prevent it. According to Ware (29), presenting information that is complete and easy to understand can increase users' knowledge and motivate them to take preventive action. The entire content presented in this prototype represents the primary goal of the hydrated website by providing complete guidance for users in preventing dehydration, which is very beneficial for society.

In terms of usefulness, respondents considered this prototype to be very useful. The perceived benefits are related to knowledge about hydration conditions and how to manage and prevent dehydration. Beldad & Hegner research (30) explains the importance of the benefits of an application so that consumers always use it. The favorable perception of the usefulness of this prototype can be attributed to the accessibility and relevance of the information provided, as it allows users to take preventive measures early and independently. This is in line with the results of Or & Krash (31) review and Afful-Dadzie (32) research on the importance of relevance, quality, and suitability of information in online health applications. The results of a review from Free et al. (33) regarding the effectiveness of health behavior change or disease management interventions based on mobile health technology for health service consumers and another review from Ngwatu et al. (34) regarding the impact of digital technology on tuberculosis treatment are also very beneficial for society.

Although, in general, the hydrated website prototype was accepted and rated well by respondents. Improvement efforts will continue to be carried out to improve all aspects of the website in the future, especially the

usability aspect, to encourage sustainable use further. Efforts that can be made include developing interactive and personal features such as automatic hydration reminders, educational quizzes and interactive content, and graphs of progress in maintaining hydration. This is important as research by Miller & Seto (35) and Pires et al.,(36) explain that the completeness of features such as reminder messages, games or quizzes, interactive content, and graphs of health developments can increase user satisfaction and interest in using an application. In the design aspect, you need to consider the choice of color and appearance for various devices so that it doesn't seem boring. Research by Chung et al., (37) explains that website color influences consumers' decisions to choose a product. According to Bleicher (38), visual color harmony is essential and can affect a person in determining a product choice.

Other efforts related to ease of access, especially website performance, need to be maintained so that it is always stable and fast for users to access; even if necessary, there is an offline version that contains at least general information as a reminder of the importance of hydration. This is in line with research by Gong et al., (39), which contains information about the importance of online and direct information services in improving service quality. Research by Zhang et al., (40) also explains the importance of applications that can be accessed online and offline in increasing the benefits and profits of a product. Improving the content regarding the completeness of educational content related to hydration and other supports, as well as tutorials on using the hydration website, outreach to the public is also essential so that the existence of the hydration website is better known to users and, most importantly, ensuring the level of security of user data. Khan & Yairi research (41) explains the importance of educational features in health applications so that they provide more benefits to their users. Improvements and completeness of the hydration website will have an impact on the quality of the website or application, making it more comprehensive and effective in increasing public awareness regarding the importance of hydration. This prototype still needs to be improved before proceeding to the website or application creation stage to increase the completeness of the content, make the appearance design more attractive, and add value to society in general.

Limitations and Cautions

The limiting factor in this research is that the sample coverage is narrower and is limited to the Banjar Regency area. However, the researcher assumes that the sample's representativeness is still tolerable because it represents the community, especially teenagers who understand technology. Another factor that may be biased is the adequacy of the sample in the general public group, which researchers cannot optimally control.

Recommendations for Future Research

Based on the study's findings, enhancing the hydrated website prototype is suggested by integrating interactive features like reminders to drink water, collaborating with healthcare professionals for credible content, and personalizing information for specific user groups like athletes and older people. Expanding outreach through social media campaigns and developing a mobile application would improve accessibility and engagement. Regular evaluations based on user feedback are recommended to keep the platform relevant. Additionally, ensuring inclusivity through accessibility features and collaborating with educational institutions or communities can further amplify the website's impact on promoting healthy hydration habits.

CONCLUSION

Public perception about the hydrated website prototype for preventing dehydration in the good category includes user perception, ease of access, appearance design, completeness of content, and usefulness in the good category or assessed positively and accepted by users. Future research could explore hydration website user feedback and examine more deeply the impact of hydration management on society.

AUTHOR'S CONTRIBUTION STATEMENT

DH designed and carried out the study. HR designed the study, analyzed the results, interpreted them, and wrote the manuscript. MRP carried out research and evaluated research progress. All authors discussed the results and contributed to reviewing the final manuscript.

CONFLICTS OF INTEREST

The authors declare that they have conflict of interest related to this publication.

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