Journal of Health Education and Behavior (JOURNAL HEB)
https://ejurnal.jurkeppolkesdo.my.id/index.php/HEB/en
JOURNAL HEB., Vol 2 No 1 (2026): Juni, 11-16
E. ISSN: 0000 - 0000; P. ISSN: 0000 - 0000

The Impact of Digital Media Based Health Services *"Smart Code"* in Improving Clean and Healthy Living Behavior in the Community at Manado City Hospital

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Received: 04 Juni 2026
Received in revised: 10 Juni 2026
Accepted: 20 Juni 2026
Available online: 30 Juni 2026

Abstract

*This study examined the impact of the **Smart Code** digital health service on promoting Clean and Healthy Living Behavior (CHLB) among patients and visitors at Manado City General Hospital. The increasing use of digital technology enables convenient access to health information through Quick Response (QR) Codes; however, limited digital literacy may hinder optimal utilization. This study aimed to explore the contribution of Smart Code to health education services and CHLB implementation using the Rapid Assessment Procedure (RAP) approach. Data were collected through in-depth interviews and observations involving patients, health promotion officers, and media developers selected purposively. The findings indicated that Smart Code improved access to health information, enhanced knowledge and awareness of personal and environmental hygiene, and encouraged healthy practices such as proper handwashing, appropriate waste disposal, and compliance with smoke-free regulations. These behavioral changes were supported by predisposing factors, including knowledge and attitudes, and enabling factors, particularly digital media availability. Smart Code represents an effective innovation for strengthening digital health promotion and fostering sustainable healthy behaviors in healthcare settings.*

Keywords: *Health services, Smart Code, digital health promotion, Clean and Healthy Living Behavior, QR Code.*

Abstrak (Indonesian)

Penelitian ini bertujuan menganalisis dampak layanan kesehatan digital **Smart Code** dalam meningkatkan Perilaku Hidup Bersih dan Sehat (PHBS) pada pasien dan pengunjung di Rumah Sakit Umum Daerah Kota Manado. Perkembangan teknologi digital memungkinkan masyarakat mengakses informasi kesehatan secara mudah melalui Quick Response (QR) Code, meskipun keterbatasan literasi digital masih menjadi kendala dalam pemanfaatannya secara optimal. Penelitian ini menggunakan pendekatan Rapid Assessment Procedure (RAP) dengan pengumpulan data melalui wawancara mendalam dan observasi terhadap pasien, petugas promosi kesehatan, serta pengembang media yang dipilih secara purposive. Hasil penelitian menunjukkan bahwa Smart Code meningkatkan akses terhadap informasi kesehatan, memperbaiki pengetahuan dan kesadaran mengenai kebersihan diri serta lingkungan, serta mendorong perilaku sehat seperti mencuci tangan dengan benar, membuang sampah pada tempatnya, dan mematuhi kawasan tanpa rokok. Perubahan perilaku tersebut didukung oleh faktor predisposisi, seperti pengetahuan dan sikap, serta faktor pendukung berupa ketersediaan media digital. Smart Code merupakan inovasi yang efektif dalam memperkuat promosi kesehatan digital dan mendorong penerapan PHBS secara berkelanjutan di fasilitas pelayanan kesehatan.

Kata kunci: layanan kesehatan, Smart Code, promosi kesehatan digital, Perilaku Hidup Bersih dan Sehat, QR Code.

INTRODUCTION

Health services are planned and integrated efforts made by the government, community, or the private sector to maintain and improve public health. The transformation of Indonesia's health system emphasizes integrated, accessible, family-based, and community-based primary services to ensure equitable distribution of services and equal quality in all regions. According to the *World Health Organization* (WHO) and UNICEF (2023), PHBS that include access to clean water, proper sanitation, and personal hygiene practices such as hand washing are still significant global challenges. The latest data shows that in 2022, as many as 2 billion people in the world still do not have basic facilities for washing hands at home, 3.5 billion people do not have safely managed sanitation services, and 2.2 billion people do not have access to safe drinking water. Based on *the Indonesian Health Profile*, in 2021 the percentage of households implementing PHBS reached 62.25%, while the national target in the Ministry of Health's Strategic Plan is 70% in 2023. In North Sulawesi Province, it shows that the implementation of PHBS is still far from optimal, with healthy living behaviors only reaching 20.3% in 2023. According to data from Manado City Hospital, the implementation of PHBS at Manado City Hospital, still has not been achieved according to the target, with various community groups showing that of 83 staff/employees (HR) of Manado City Hospital, there are 67.5% who carry out PHBS and 32.5% who do not carry out PHBS, then the patient shows that out of 105 Patient Respondents of Manado City Hospital, there were 17.1% who carried out PHBS and 82.9% who did not carry out PHBS and for the distribution of the implementation of PHBS to visitors, it showed that of the 76 Respondents who Visited the Manado City Hospital, there were 35% who carried out PHBS and 64.5% who did not carry out PHBS.

METHODS

Design, place and time

This study uses a qualitative approach. This research aims to obtain in-depth information about the Impact of Digital Media-Based Health Services "*Smart Code"*. This design allows researchers to understand in depth the Impact of Digital Media-Based Health Services "*Smart Code"* through interviews, and documentation. The research was carried out at the Manado City Hospital located in Tingkulu, Wanea District. The research period will be held from May to June 2025.

Number and method of taking subjects

Informants were selected using *the criterion sampling technique* with the age group of 15–60 years old and were willing to be interviewed. The informants consisted of eight core informants and supporting informants, consisting of the community and two health workers from the Manado City Hospital.

Types and Methods of Data Collection

This research uses qualitative data collection techniques through two main methods, namely in-depth interviews, observation and documentation. In-depth interviews were conducted with informants consisting of core informants and supporting informants. Meanwhile, the data collected is in the form of primary data. The primary data in this study is information obtained from informants through Indept Interview and Observation. The secondary data used are data from PHBS data collection at Manado City Hospital and the results of annual reports from Manado City Hospital. The triangulation technique is used to test the validity of the data by comparing the results of the three methods to obtain a more comprehensive understanding.

Data processing and analysis

Data obtained through interviews, and documentation were analyzed using an interactive analysis model from the *Rapid Assessment procedures* (RAP) research of Schtimshaw SCM & Hurtado (1992). The stages of data analysis are data collection, data analysis, data reduction, data presentation, and conclusion

drawn. At the data reduction stage, the researcher screens data that is relevant to the research focus on the impact of digital media-based health services "*Smart Code*". Furthermore, the data is presented in the form of a descriptive narrative based on the main themes found from the interview results. After that, conclusions were drawn. During the analysis process, the researcher also triangulates the data to increase the validity and validity of the research findings.

RESULTS AND DISCUSSION

A. RESULTS

Based on the findings from the in-depth interviews and observations, it was found that the majority of participants who received health education services through the "Smart Code" digital media demonstrated adequate knowledge, positive attitudes, and appropriate practices regarding the use of Smart Code technology, the quality of health education services, and the implementation of Clean and Healthy Living Behavior (Perilaku Hidup Bersih dan Sehat/PHBS).

Knowledge of Using Smart Code Digital Media

Most participants reported that they understood how to use the Smart Code (QR Code)-based digital media to access health information. However, several participants stated that although they knew how to use the QR Code, they did not own a smartphone and therefore had to borrow one from family members to access the digital content.

Attitudes Toward the Use of Smart Code Digital Media

Not all participants actively used the Smart Code digital media; however, the majority had utilized the system. For participants who were unable to access the Smart Code independently, an alternative solution was provided by displaying the digital educational content directly on a television screen in the waiting room after the QR Code had been scanned. This approach enabled all participants to access the educational materials regardless of smartphone ownership.

Practices in Using Smart Code Digital Media

Participants' practices in using the Smart Code digital media were generally consistent with their level of knowledge and attitudes. Individuals who understood how to use the Smart Code began utilizing it to obtain health education materials. Nevertheless, the adoption and utilization of the Smart Code technology had not yet been evenly distributed across all community members.

Reliability of Health Education Service Quality

Participants at Manado Regional General Hospital (RSUD Kota Manado) stated that healthcare professionals played an active role in delivering health education. The use of Smart Code digital media by healthcare providers enhanced participants' understanding of the educational materials. These findings were consistent with the researchers' observations, which showed that health education activities were conducted effectively and in accordance with the prepared educational content. Health education was delivered directly to patients by healthcare professionals, allowing information to be communicated more clearly and systematically.

Responsiveness of Health Education Service Quality

Several participants actively responded to the health education sessions by asking questions related to the educational materials on PHBS. Healthcare professionals provided appropriate answers that addressed participants' needs, and overall, participants expressed a positive response toward the healthcare providers.

Assurance of Health Education Services

Participants at Manado Regional General Hospital reported a high level of trust in the health education materials delivered by healthcare professionals, indicating confidence in both the content and the competence of the educators.

Empathy in Health Education Services

Participants stated that healthcare professionals demonstrated friendliness, patience, and empathy when responding to questions during health education sessions. They also provided continuous assistance throughout the educational process, enabling participants to better understand the educational materials.

Tangible Aspects of Health Education Services

Participants who attended the health education sessions reported that they were able to understand the explanations provided by healthcare professionals. These findings suggest that the educational activities were effective and had a positive impact on participants.

Knowledge of PHBS

Participants indicated that they possessed adequate knowledge and understanding of PHBS. This knowledge was primarily acquired through previous health education services provided by healthcare professionals, who also encouraged patients and visitors to practice healthy behaviors, particularly while utilizing healthcare facilities at Manado Regional General Hospital.

Attitudes Toward the Implementation of PHBS

Participants reported that practicing PHBS had become part of their daily routine, particularly hand hygiene before using healthcare facilities at Manado Regional General Hospital. These positive attitudes had generally developed from healthy habits established at home. However, one participant admitted to continuing to smoke at home, although refraining from smoking within the hospital environment.

Practices in Implementing PHBS

Based on the researchers' observations, healthcare facilities supporting the implementation of PHBS were available and complied with environmental health standards at Manado Regional General Hospital. Consequently, both the community's health practices and the available healthcare facilities were considered supportive of the successful implementation of PHBS.

DISCUSSION

The impact of smart code digital media-based health services *in* improving PHBS

From the results of interviews and observations, it was found that health workers provide health education services in a friendly manner and in accordance with standards, and the public gained knowledge about how to use digital *media smart codes* and available health information such as clean and healthy living behaviors. In attitude, most people accept and make good use of the existence of *Smart Code* as an innovative information medium, although there are still obstacles in the form of limited device ownership and digital literacy. Community actions also show a positive response, seen by the beginning of the use of smart code digital media to obtain health information, although it is not completely even and consistent in the implementation of clean and healthy living behaviors outside or inside the hospital environment. According to researchers, one of the main causes of the acceptance of health information and education services is the lack of use of smart code digital media . Due to the limited facilities and knowledge of the community such as the lack of literacy in the use of mobile digital media, the use of these media is not optimal. However, the solutions that have been carried out by the hospital can fulfill health information and education services, namely by using digital television media to the community.

Use of health media through digital media "*Smart code*"

From the results of interviews and observations, the use of digital *smart code* (*Qr Code*) media is still limited and people's literacy in using *mobile phone* technology is still lacking and dependent on others, literacy in the use of technology and smart *code* media (*Qr Code*) is obtained through daily experience or accompanied by how to use *mobile phone* facilities personal, not only from momentary information provided directly by health workers. This indicates that there is a gap in the distribution of smart *code* (*Qr* Code) digital media, where one of the people does not have more knowledge about the use of digital technology, so that it has an impact on the success of digital media-based health education services organized by hospitals.

According to the researcher, this condition shows that the use and creation of smart *code* media (*Qr Code*) has not been fully effective and based on real needs in various community groups. Smart *code* (*Qr Code*) media has not touched the majority of people who are elderly or elderly. Therefore, the use of smart *code* (*Qr Code*) digital media is not only determined by community involvement, but also by the technological literacy ability and facilities used by the community in accessing that the media is designed to really reach all people in hospitals, in a form that is easy to understand and relevant according to needs.

Implementation of clean and healthy living behavior (PHBS)

From the results of in-depth interviews and observations, various facilities have been provided to support the implementation of clean and healthy living behaviors, the public must always be urged to use, maintain attitudes and implement clean and healthy living behaviors in hospitals. The application of behavior generally comes from knowledge and attitudes that must be instilled in the community, so that they can create actions or behaviors that are in accordance with health standards. But one of the respondents stated that he had received and understood the health information provided by the health workers, and had implemented clean and healthy living behaviors, but the respondent only applied it while in the hospital, if he had returned home, unhealthy behaviors would be carried out again, for example, smoking.

According to the researcher, this condition confirms that the provision of health education and information services using smart code digital media can have an impact on increasing knowledge, attitudes and actions in the community at Manado City Hospital, but for the impact, especially on actions or behaviors, it cannot be applied in the long term, but applied only when an appeal is given or in the short term.

CONCLUSION

Based on the results of the research on the impact of health services based on digital media "*Smart Code"* in improving clean and healthy living behaviors, it can be concluded that:

1. The impact of health services based on digital media "*Smart code"* In improving clean and healthy living behaviors in the community at Manado City Hospital, it provides many benefits because it can improve knowledge, attitudes and actions on some PHBS in the community, although not thoroughly and evenly. In the aspect of health services, the use of *Smart Code* media as a means of health information and education has shown the ability to convey health messages to the public. Health workers have played an active role in conveying information through digital media, although limited facilities and community technological literacy are the main obstacles in the optimal use of this media. This can be seen from the still dependence on hospital television as an alternative media.
2. In the aspect of using "*Smart code"* digital media, this media is considered innovative and relevant to technological developments, and has been supported by hospitals. However, its use is still temporary and uneven for all groups of people, especially the elderly and people with limited access or understanding of technology. The digital literacy gap is a challenge in reaching all community groups fairly and appropriately.

3. In the aspect of implementing PHBS, although there has been an increase in public knowledge and understanding of clean and healthy living behaviors while in the hospital environment, these behavioral changes have not completely become habits in daily life. Healthy behaviors such as washing hands or not smoking are only applied while in the hospital, not in a long-term context, such as at home or in other environments. Overall, it can be concluded that the Impact of Digital Media-Based Health Services "*Smart Code"* at Manado City Hospital is quite important in increasing public awareness and knowledge about PHBS. However, the impact on long-term behavior change is limited. To improve the capabilities of this media, it is necessary to strengthen supporting facilities, increase people's digital literacy, and provide a more detailed and sustainable educational approach in accordance with the needs of diverse communities.

ACKNOWLEDGMENTS

The researcher would like to express his deepest gratitude to all parties who have provided support and assistance during this research process. In particular, the researcher expressed his appreciation and gratitude to the Manado City Hospital for providing permits, facilities, and access to information so that this research could be carried out properly. Thank you also to all informants who have been willing to take the time and provide valuable information as part of the data collection process.

REFERENCE

1. Kementerian Kesehatan Republik Indonesia. (2022). *Profil Kesehatan Indonesia Tahun 2022*. Jakarta: Kementerian Kesehatan RI.
2. WHO & UNICEF. (2023). *Progress on household drinking water, sanitation and hygiene 2000–2022: Special focus on gender*. Geneva: World Health Organization (WHO) and the United Nations Children's Fund (UNICEF).
3. Kementerian Kesehatan Republik Indonesia. (2022). *Profil Kesehatan Indonesia Tahun 2022*. Jakarta: Kementerian Kesehatan RI.
4. Badan Pusat Statistik. (2023). *Statistik Kesehatan Provinsi Sulawesi Utara*.
5. RSUD Kota Manado. (2023). Profil Kesehatan Rekapan Data Laporan Tahunan RSUD Kota Manado.