

Enhancing Citizen Health Literacy Through Digital Technology

You-Ping Wang^{ab,1} and Pei-Hung Liao^a

^a*School of Nursing, National Taipei University of Nursing and Health Sciences, Taipei City, Taiwan*

^b*Department of Nursing, National Taiwan University Hospital*

ORCID ID: You-Ping Wang <https://orcid.org/0000-0002-1755-5120>

Pei-Hung Liao <https://orcid.org/0000-0003-3047-2394>

Abstract. Contemporary society faces significant public health challenges with prevalent unhealthy behaviors and environmental risks leading to non-communicable diseases. This study assesses health awareness campaigns' effectiveness in a specific Taiwanese municipality, focusing on the impact of a health care management system. Objectives include enhancing public health literacy and evaluating community health promotion. The proposed system includes a personalized assistant app, personnel education, and events covering topics like hypertension, diabetes, diet, exercise, and chronic disease prevention. In summary, the research advocates for effective public health interventions, integrating digital technologies, personalized health management, and community engagement to promote health literacy and healthier lifestyles.

Keywords. Public Health Challenges, Health Awareness Campaigns, Personalized Health Management, Community Health Promotion, Application

1. Introduction

In today's society, we grapple with significant public health challenges, marked by prevalent unhealthy behaviors and escalating environmental risks leading to non-communicable diseases. Heightened awareness, especially in primary prevention, is crucial. Public health, spanning organizational, community, and societal levels, aims at disease prevention, lifestyle enhancement, and creating health-supportive environments.

To achieve these goals, integrating psychological principles with information technology is imperative for understanding factors influencing health-related decision-making. Employing pre-post comparative research, we assess the effectiveness of uniquely designed public health promotion campaigns, pivotal in elevating public consciousness, enhancing knowledge, and fostering positive health attitudes and behaviors.

¹ Corresponding Author: You-Ping Wang, silences43@ntuh.gov.tw.

2. Methods

We launched the "Digital Care Note" app, a personalized healthcare service tool that records physiological data, provides self-assessment, and abnormality alerts, and fosters social interaction. Accessible on mobile or web, users can securely connect to Bluetooth devices. We're hosting 50 community health events covering topics such as hypertension, diet, and chronic disease prevention policies. Through pre- and post-assessments, we will evaluate the effectiveness of this citizen-centric health promotion approach using the "Digital Care Note" app in improving health literacy.

3. Results

The researchers included 804 cases, consisting of 365 individuals below 70 years old and 439 individuals aged 71 or older. For those over 70, the average health literacy knowledge score increased from 4 to 9, a 5-point improvement. In the under-70 group, the average score increased from 3 to 9, a 6-point improvement. Independent t-test showed a significant difference in scores ($t = -5.207, P < 0.001$).

Health literacy levels varied across Taipei City's 11 districts. Datong and Nangang districts saw the most significant improvement, with a 5-point increase in both pre-test and post-test scores.

4. Conclusions

Individuals under 70 had lower scores, likely because of their work commitments limiting exposure to health information. Those aged 71 and above, being retirees and more health-conscious, scored higher. The intervention in our study significantly improved health literacy for both age groups.

In administrative districts, Datong and Nangang showed the most notable improvement, around 5 points higher than other areas. This could be attributed to differences in residents' access to health information, education, habits, and demographics. Emphasizing targeted health promotion for diverse age groups and regions is crucial for enhancing overall health literacy.

Acknowledgements

Smart Ageing Tech Co., Ltd. and the Taipei City Government.

References

- [1] Aldawood, H., Alabadi, M., Alharbi, O., & Skinner, G. (2019). A Contemporary Review of Raising Health Awareness Using ICT for Application in the Cyber Security Domain. *International Conference in Engineering Applications (ICEA)*, 1–8. <https://doi.org/10.1109/ceap.2019.8883454>
- [2] Bugshan, W. M., Qahtani, S. J. A., Alwagdani, N. A., Alharthi, M. S., Alqarni, A. M., Alsuat, H. M., Alqahtani, N. H., Alqahtani, M. R., Alshammari, M. T., Albaqami, R. A., & Almotairi, A. H. (2022). Role of Health Awareness Campaigns in Improving Public Health: A Systematic Review. *International Journal of Life Science and Pharma Research*. <https://doi.org/10.22376/ijpbs/lpr.2022.12.6.129-35>
- [3] Mahadewi, E. P., Mustikawati, I. S., Heryana, A., & Harahap, A. (2021). Public Health Promotion and Education with Hypertension Awareness in West Jakarta Indonesia. *International Journal of Community Service*, 1(2), 101–107. <https://doi.org/10.51601/ijcs.v1i2.11>