

# Attitude Towards Digital Health Literacy Among Healthcare Professionals at Teaching Hospital, Gangtok: A Cross-Sectional Study

Anusika Sharma<sup>1</sup>, Kreeti Pal<sup>2</sup>

<sup>1</sup>Master of Hospital Administration, Department of Hospital Administration, Sikkim Manipal Institute of Medical Sciences, Sikkim Manipal University

<sup>2</sup>Assistant Professor, Department of Hospital Administration

**Abstract:** ***Introduction:** In the current scenario, digitalization is rapidly transforming the healthcare system with various eHealth applications such as electronic health records and telemedicine. This study aims to assess the attitude towards Digital Health Literacy among healthcare professionals at Gangtok's teaching hospital. **Methods:** A cross-sectional study was conducted at the teaching hospital in Gangtok from March 27th to April 30th, 2024. The study included 503 healthcare professionals including physicians, nurses, paramedics, and physiotherapists. Data were collected using a self-structured five-point Likert Scale. **Results:** Among the 624 healthcare professionals surveyed, 503 participated, resulting in an 80.6% response rate. The majority of respondents were nurses (44.2%), followed by physicians (35.9%), paramedics (12.6%), and physiotherapists (7.3%). Out of the 503 respondents, 497 (98.8%) had a favorable attitude towards digital health, 5 (0.99%) had a moderately favorable attitude, and 1 (0.1%) had an unfavorable attitude. The study investigated the association between healthcare professional's attitudes towards digital health literacy and their work experience and job description. The analysis using Fisher's Exact Test alternative hypothesis was rejected, as p-values of 0.502 for job description and 0.656 for work experience exceeded the 0.05 significance level. This indicates no significant association between attitudes towards digital health and selected variables. **Conclusion:** The favorable attitude toward digital health literacy among healthcare professionals shows a strong interest in learning and using various digital health technological tools in the workplace. Providing healthcare professionals with more training and information about digital health tools will help with time management and overall patient care. The findings suggest that factors other than job role or tenure, such as individual predisposition, institutional culture, or exposure to technology, may shape attitudes toward digital health.*

**Keywords:** Attitude, Digital Health, Healthcare Professionals, Literacy

## 1. Introduction

According to the World Health Organization digital health literacy "is the ability to seek, find, understand and appraise health information from an electronic source and apply the knowledge gained to addressing or solving a health problem."<sup>[1]</sup>

The digital revolution has changed the product and overall development in all aspects of daily living including the healthcare sector.<sup>[2]</sup> It is a multidisciplinary domain that aims to enhance its efficiency in monitoring patient diagnosis, management, prevention, rehabilitation and long-term care delivery.<sup>[3]</sup>

In 2005 WHO came up with long-term strategic plan which mainly focuses on developing and implementing eHealth services to develop the infrastructure for information, communication and technologies for health to promote equitable, affordable and universal access to their benefits.<sup>[4]</sup>

The World Health Organization (WHO) is leveraging digital innovations to advance global health and well-being.<sup>[1]</sup>

### Key Benefits

- **Improve Access to Healthcare:** Telemedicine provides medical consultations and treatments to individuals in remote or underserved areas without the need for physical travel.

- **Enhance Health Monitoring:** Wearable devices and mobile health apps enable continuous monitoring of vital signs and chronic conditions for early detection and intervention.
- **Streamline Health Data Management:** Electronic health records improve data sharing and coordination among healthcare providers for accurate diagnoses and personalized treatments.
- **Support Public Health Initiatives:** Digital platforms facilitate health education, disease surveillance, and dissemination of public health information to manage outbreaks and promote healthy behaviors.

The WHO is actively working to integrate digital technologies into global health strategies through key initiatives:

- 1) Global Strategy on Digital Health
- 2) Digital Health Atlas
- 3) mHealth for Noncommunicable Diseases (NCDs)
- 4) Digital Health Workforce Development

The potential of digital health solutions lies in their ability to transform healthcare delivery and public health management. These technologies offer benefits such as increased efficiency, enhanced patient engagement, data-driven decision-making, and scalable health solutions.<sup>[1]</sup>

The Global Initiative on Digital Health (GIDH) is a significant program managed by the World Health Organization (WHO) that aims to accelerate the implementation of the Global Strategy on Digital Health. Its

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objectives include evaluating country-specific digital health requirements, aligning resources to maximize impact, supporting strategic objectives, and fostering local development.<sup>[5]</sup>

GIDH collaborates with organizations, institutions, and government technical agencies to strengthen health systems, promote innovation, and enhance knowledge exchange.<sup>[5]</sup>

The Digital India Campaign, launched by the Government of India in 2015, aims to leverage digital technologies to enhance various sectors, including healthcare. The campaign included initiatives to integrate digital technologies into healthcare delivery, with a focus on rural areas. The National Health Policy of 2017 envisioned a fully digitized healthcare system in India and led to the launch of the Ayushman Bharat Digital Health Mission. This initiative aims to revolutionize healthcare delivery through digital health records and telemedicine, improving accessibility and transparency.<sup>[6]</sup>

These efforts position India as a hub for innovation in healthcare, creating opportunities for investment in digital health technologies and startups. The convergence of Digital India, the National Health Policy, and the Ayushman Bharat Digital Health Mission reflects India's commitment to utilizing digital technologies for inclusive healthcare transformation and economic growth.<sup>[6]</sup>

The objectives of Digital India are to empower citizens, stimulate economic expansion, and advance technology. The program has narrowed the gap between the government and its citizens by digitising governance and service delivery, leading to transparent, corruption-free, and efficient public services. Additionally, Digital India has brought significant advancements to the healthcare sector.<sup>[6]</sup>

This initiative aims to create a digital health ecosystem, providing citizens with a unique health ID and enabling access to various health services through digital platforms. Key components include:

- 1) CoWIN App: For COVID-19 vaccination management.
- 2) Aarogya Setu: For contact tracing and self-assessment.
- 3) e-Sanjeevani: Telemedicine service for remote consultations.
- 4) e-Hospital: Digitalizing hospital management and patient records.

These initiatives bridge the gap among healthcare stakeholders by creating digital highways for seamless communication and service delivery. Through the Digital India program, India is a global leader in using technology to enhance citizens' lives, with a significant impact on governance and healthcare transformation.<sup>[6]</sup>

### Need of the study

Assessing a Digital Health Literacy among healthcare professionals is a path to obtain baseline data about the healthcare professional's technological skills and will help in understanding the utilization of digital health tools among healthcare professionals, as also limited studies has been conducted in this regio

### Aim of the Study:

To assess the attitude towards Digital Health Literacy among healthcare professionals at teaching hospital Gangtok.

### Objectives of the Study:

- To estimate the attitude towards digital health literacy among healthcare professionals.
- To determine the association of attitude towards Digital Health among healthcare professionals with selected demographic variables.

### Hypothesis

- **H1**-There is an association between attitude towards digital health among healthcare professionals with their selected demographic variable.
- The hypothesis will be tested at 0.05 level of significance.

## 2. Materials and Methods

### Study Design

The research design adopted is a cross-sectional research design to assess the attitude towards digital health literacy among healthcare professionals at the teaching hospital Gangtok.

### Study Duration

The total estimated duration for the study was 4 months.

### Study Setting

The study was conducted in Central Referral Hospital, Gangtok, Sikkim.

### Study Population

In this study, The population consists of Healthcare Professionals working at Central Referral Hospital, Gangtok, Sikkim.

### Sample

In this study samples are Doctors, Nurses, Physiotherapists, and Paramedics working at Central Referral Hospital, Gangtok, Sikkim.

### Sample Size

A complete enumeration of the sample.

624 healthcare professionals working at Central Referral Hospital, Gangtok, Sikkim, who fulfill the inclusion criteria will be taken for the study.

### Sampling Criteria

#### Inclusion criteria:

- Healthcare professionals - doctors, nurses, physiotherapists, paramedics.
- Who are permanent staff as well as contractual staff.

#### Exclusion criteria

- Non-clinical staff.
- Who don't have access to a smartphone.

### Data Collection Tools

Variable	Tools	Component
Demographic	Section A- Demographic Variables	Age, gender, educational qualification, clinical experience, profession
Attitude	Section B- Structured Questionnaire using five point Likert Scale (strongly agree= 5 to strongly disagree= 1)	Meaning, Different sources, access to success, benefits, their opinion

Out of a maximum of 60 points, respondents with a total score of 35-60 will be classified as favorable. Respondents with a total score of 25-35 will be classified as moderately favorable, while those with a total score below 25 will be classified as unfavorable.<sup>[22]</sup>

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### 3. Data Collection Method

After receiving approval from:

- Institutional Research Committee, SMIMS
- The Medical Superintendent, CRH
- Institutional Ethical Committee, SMIMS

The data collection process was initiated through a Google Form, which included a participant information sheet, a consent form, and 12 close-ended questionnaires. These forms were circulated via WhatsApp among 624 healthcare professionals, including doctors, nurses, paramedics, and physiotherapists. The distribution was coordinated by discussing with the heads of departments (HODs) and staff members of the respective departments. To ensure a high response rate, multiple follow-ups were conducted weekly through in-person visits to each department. Confidentiality was maintained by making it mandatory for participants to fill out the consent form before proceeding to the questionnaire.

#### Data Analysis Plan

The data analysis was conducted according to the study objectives and hypotheses using descriptive and inferential statistics. The plan for data analysis is as follows:

#### Descriptive statistics

Percentage distribution of healthcare professionals' attitudes toward digital health literacy using Microsoft Excel and SPSS (Version 25)

#### Inferential statistics

Calculation of Fisher's Exact Test value to determine the association between healthcare professionals' attitudes and their socio-demographic variables using SPSS (Version 25)

### 4. Results

#### Section 1: Findings related to frequency and percentage distribution of the socio-demographic profile of healthcare professionals.

A total of 503 healthcare professionals took part, resulting in an overall response rate of 80.6%. The majority of participants were aged between 25-30 years (290 or 57.6%), followed by those aged 30-35 years (128 or 25.6%), 35-40 years (52 or 10.5%), and those above 40 years (32 or 6.3%). Among the participants, 64.6% were female and 35.3% were male. In terms of educational qualifications, 35.9% held a degree of MBBS and above, the same percentage (35.9%) had a B.Sc. degree, 20.6% had a Diploma degree, and 7.3% had a degree of BPT and above. The largest group of participants were nurses (222 or 44.2%), followed by physicians (181 or 35.9%), paramedics (63 or 12.6%), and physiotherapists (37 or 7.3%). Experience-wise, the majority of participants had 1-5 years of experience (263 or 52.2%), while those with over 10 years of experience made up 6.7% of the total participants

#### Section 2: Description of overall attitude towards digital health literacy among healthcare professionals.

This section describes the overall attitude of healthcare professionals towards digital health literacy. Healthcare professionals' attitudes towards digital health literacy were evaluated using a 5-point Likert scale. The scale consisted of 12 items, with a maximum score of 60 and a minimum of 12. Attitudes were grouped into three categories: favourable (scores between 35 and 60), moderately favourable (scores between 25 and 35), and unfavourable (scores below 25). The results showed that the vast majority of participants (98.8%, 497 individuals) had a favourable attitude towards digital health literacy.

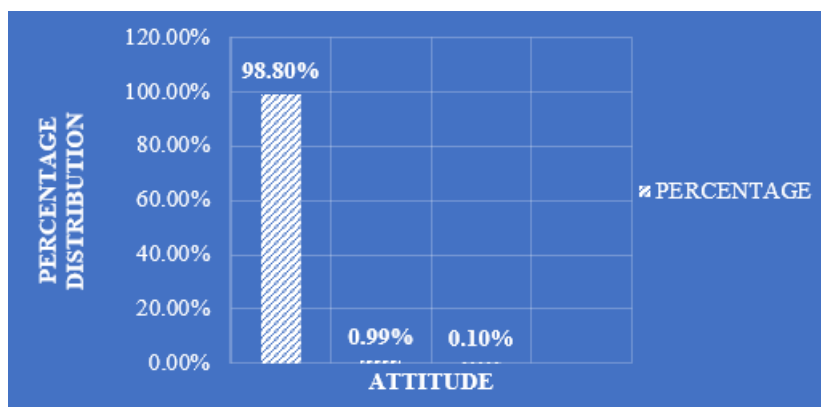


Figure 1: The overall percentage of attitude among healthcare professionals towards digital health literacy

The figure shows the overall percentage of the attitude of healthcare professionals towards digital health literacy in which the majority of participants have favorable attitude (98.8%).

### Section 3: Description of the Five-point Likert Scale scores with corresponding classifications

This section describes the corresponding classification of Five -Point Likert Scale into range

**Table 1:** The Five point Likert Scale scores with corresponding classifications

Likert Scale	Range
Strongly Disagree	1-1.80
Disagree	1.81-2.60
Not Sure	2.61-3.40
Agree	3.41-4.20
Strongly Agree	4.21-5.00

Table 1 shows the classification of a 5-point Likert Scale classified into the intervals of the mean scores. This classification shows the overall opinion of respondents based on their ratings.<sup>[28]</sup>

#### 1) Fisher exact test to find out the association of attitude towards digital health among healthcare professionals with selected demographic variables (job description)

	Value	Exact Sig. (2- sided)
Fisher's Exact Test	5.343	.502
N of Valid Cases	504	

The analysis in Table showed a Fisher's Exact Test result of 0.502, which is higher than the significance level of 0.05. This suggests that an individual's job role (Physician, Nurse, Paramedic, Physiotherapist) does not significantly influence their attitude toward digital health literacy, as the majority of participants exhibit a favorable attitude regardless of their profession. indicating no significant association between attitudes toward digital health and job description among healthcare professionals. The majority of participants, including Physicians (35.3%), Nurses (35.3%), Paramedics (12.1%), and Physiotherapists (7.7%), displayed a favorable attitude toward digital health regardless of their job descriptions.

#### 2) Fisher's exact test to find out the association of attitude towards digital health among healthcare professionals with selected demographic variables (work experience)

	Value	Exact Sig. (2- sided)
Fisher's Exact Test	4.983	.656
N of Valid Cases	504	

The analysis in Table 4.2 showed that there was no significant association between attitudes toward digital health and years of work experience among healthcare professionals. Most participants, regardless of their years of work experience, had a favorable attitude toward digital health, with those having 1-5 years of experience being the largest group. Moreover, the analysis in Table 4.3 revealed a Fisher's Exact Test result of 0.656, indicating that an individual's years of work experience

do not significantly influence their attitude toward digital health literacy, as most participants exhibited a favorable attitude regardless of their work experience.

### Hypothesis Testing

In the hypothesis testing conducted at a significance level of 0.05, the analysis aimed to investigate the association between healthcare professionals' attitudes towards digital health and their selected demographic variables, namely work experience and job description.

The alternative hypothesis (H1) suggested that there is an association between attitude towards digital health and the selected demographic variables. However, after analyzing the data using Fisher's Exact Test, the results did not provide sufficient evidence to accept the alternative hypothesis at the 0.05 significance level. Specifically, for job description, the p-value obtained was 0.502, and for work experience, it was 0.656. These values indicate that there is no significant association between healthcare professionals' attitudes towards digital health and either their job description or work experience.

Based on the Fisher's Exact Test results, the analysis suggests that there is no statistical association between healthcare professionals' attitudes towards digital health and their work experience or job description. Therefore, the selected variables such as work experience and job description do not appear to exert a significant influence on healthcare professionals' attitudes towards digital health.

## 5. Discussion

The global adoption of digital health technologies is rising, impacting both clinical and non-clinical healthcare settings. Key factors for successful integration include training, engagement, confidence in digital health technologies, and staff competence.

A study by Masresha Derese Tegegne et al. regarding the opinions toward Digital health literacy, this study findings showed that the participants were all healthcare professionals from the teaching hospital (411) which gave all healthcare worker a chance to participate in the study.<sup>[4]</sup>

Several studies have been undertaken to determine medical practitioners' attitude about digital health. The findings of the investigations are almost identical to those of this study. Research indicates strong acceptance of digital health system among medical professionals in India.<sup>[6,7]</sup>

To optimize healthcare services, hospitals must prioritize the effective utilization of existing digital health tools, such as Hospital Information Systems (HIS) and diagnostic devices. When implemented correctly, these systems will streamline operations, enhance patient care, and significantly improve overall efficiency. However, merely installing these technologies is insufficient; staff must receive comprehensive training to use them proficiently. Education and continuous learning are non-negotiable components of this process. Hospitals must invest in regular training programs to ensure that every staff member fully grasps the practical applications of these tools. Additionally, providing incentives will drive



staff to embrace new technology, creating a culture of innovation and continuous improvement in healthcare delivery.

## 6. Conclusion

In conclusion, this study indicates that healthcare professionals working at teaching hospital Gangtok show a predominantly favorable attitude toward digital health literacy, suggesting a high level of acceptance for digital tools in healthcare. The lack of association between attitude and job description or work experience highlights that a readiness for digital adoption transcends these demographic factors. Policy recommendations include expanding training programs and developing supportive policies to fully integrate digital health technologies, thereby improving patient outcomes and operational efficiency in healthcare facilities.

Therefore, investing in comprehensive training programs and supportive policies is crucial for the successful integration of digital health technologies. This approach will not only enhance patient care but also improve the overall efficiency of healthcare systems, paving the way for a more connected and advanced healthcare landscape. Adequate level of digital health literacy among healthcare professionals is essential for identifying their current proficiency and recommending appropriate training programs. This can enhance healthcare delivery, leading to increased patient satisfaction overall.

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