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Impact of Awareness Programme on Knowledge and Attitude Regarding Covid-19 Digital Apps among Health Workers

Madhurima.D[1], Rajathi Sakthivel[2]*, Hemamalini.M[3], Nallathai.C[4]
[1]*Asst. Professor, Hindu Mission College of Nursing, West Tambaram, Chennai, Tamil Nadu, India*
[2]*Vice-Principal, Hindu Mission College of Nursing, West Tambaram, Chennai, Tamil Nadu, India*
[3]*Principal, Hindu Mission College of Nursing, West Tambaram, Chennai, Tamil Nadu, India*
[4]*Asso. Professor, Hindu Mission College of Nursing, West Tambaram, Chennai, Tamil Nadu, India*

Abstract

Digital applications, which can be easily accessible through android mobiles or tablets, were highly helpful for the front-line Covid workers. Numerous Digital applications were developed during the Covid pandemic, which helped in contact tracing, consultations, vaccine registration, and other related information specifically for Covid-19. Health workers in the Urban Primary Health Centres were the gross root health care workers who were frequently utilised in the Covid relief work. The objectives of the study were to assess the Pre & Post-test level of Knowledge and attitude on digital applications (Covid-19) among health workers, to assess the impact of the awareness programme on Covid 19 digital applications, to find the correlation between the level of Knowledge and attitude on digital application (Covid-19) A quantitative research approach of pre-experimental one group pre & post-test design was adopted. 30 Health workers from Urban Primary Health Centres, Chennai, were selected through a non-probability convenient sampling technique. The Knowledge was assessed through a structured questionnaire & attitude was assessed through a 5-point Likert scale developed by the investigators. The study presented 7.4 & 0.9 as the mean difference for Knowledge & attitude, respectively and found significance at $p \leq 0.05$. There was a positive correlation between Knowledge and attitude with 'r' value of 0.06 and found significant relation at $p \leq 0.01$. The awareness programme developed was found effective among the health workers, and they could utilise the digital applications without doubt and hesitancy after the awareness programme developed by investigators.

Keywords: *Attitude, Awareness program, Covid 19, Digital apps, Health workers, Knowledge, Primary health centres.*

Introduction

Covid (Corona Virus Disease) pandemic hit the world drastically, and India being a densely populated country, could not skip from the list. Covid cases have been increasing day by day, and the experts of the nation have been trying their strategies to control and manage the disease effectively. Digital applications which can be used through the compact androids are more useful in increasing the productivity, information management, and conservation of personal and professional time of the health workers [1]. There has been an increased need for the development of applications for self-monitoring and preventive care [2]. The vision of digital India had been the lime lightening to tackle the situation. Various software and digital applications have been developed by various

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****Corresponding Author: rajathisakthi80@gmail.com***

sectors of the nation. There were about 346 digital applications developed in the management of Covid Care in India. 54% of the apps provided information on the prevention of Covid, 32% provided information on quarantined individuals, and 16% of the apps were designed to contact tracing [3]. The effective ones had been approved by the Ministry of Health and Family Welfare, India. Arogya Sethu, Cowin, and Sahayog were few of the applications approved by the government of India. Arogya Sethu is the app encouraged to use by people widely, which helps in contact tracing, whereas COWIN was used for registration and certification for vaccination.

The health sector had constantly been encouraging the front-line warriors to upgrade themselves to digitalization. Primary healthcare nurses are the frontline warriors who have played vital support in the fight against Covid pandemic. They are the gross root workers connecting the gap between the communities and the health sectors. Health workers who have been working in the community for many years and were used in the written documentation may find it difficult to utilise the androids and software. A descriptive study done among health workers reported that they lacked Knowledge in the technology, but they exhibited a positive attitude towards the usage of technology in the health sector [4]. Hence the awareness programme was developed to upgrade the health workers in the use of digital applications in Covid care.

A study to assess the impact of the awareness programme on Knowledge and attitude regarding digital apps for Covid-19 among health workers in selected Primary Health Centres, in Chennai.

1. To assess the Pre & Post-test level of Knowledge and attitude on digital application (Covid-19) among health workers.
2. To assess the effectiveness of awareness programme on digital applications (Covid-19) among health workers.
3. To find the correlation between the post-test level of Knowledge and attitude toward digital application (Covid-19) among health workers.
4. To associate the post-test level of Knowledge & attitude on digital apps with their selected demographic variables.

Null Hypotheses

Ho_1: There is no significant effect of the awareness programme on digital applications of Covid 19 among health workers.

Ho_2: There is no significant co-relation between Knowledge and attitude regarding the digital application of Covid 19 among health workers.

Ho_3: There is no significant association between the post-test Knowledge and attitude regarding digital apps for Covid-19 among health workers with their demographic variables.

Materials & Methods

The study was conducted using a quantitative approach with a pre-experimental one-group pre & post-test design. 30 health workers of selected urban primary health centers of Chennai were selected for the study using a non-probability convenient sampling technique. An awareness programme on digital apps for Covid was planned and prepared by the investigators regarding the various digital applications for Covid had been tested in terms of Knowledge and attitude of health workers.

Health workers included in the study were Staff nurses, Urban Health Nurses, and Health Educators in the selected health centres from Chennai. Staff nurses in this study were considered professionally qualified nurses, Urban Health Nurses were the field workers, and the health educators were the sector health nurses working in the Urban Primary Health Centres and were involved in the Covid care duties.

The structured questionnaire, which contains 21 multiple-choice questions on knowledge aspects regarding the digital applications used

for Covid 19 management in the health sector, was used to assess the Knowledge of the health workers. Picking up the correct options were scored as "1," and the wrong option was scored as "0". The overall score was categorized into 3 levels as where <38% of the score was considered as poor Knowledge, 39 – 70% score was considered as having moderate Knowledge, and more than 71% score is considered as having good Knowledge.

The investigators developed a five-point Likert scale to assess the attitude of health workers regarding the use of digital applications. The scale consists of 10 items, of which 5 items were positive, and 5 items were negative. The attitude was measured under the categories of very strongly agree, strongly agree, agree, disagree, and strongly disagree. Each category can be quantified as 5,4,3,2,1, respectively for the positive items and vice versa for the negative items. The overall score was 30, and the score was interpreted in 3 categories where <36% was considered poor attitude, 37 – 70% was considered moderate Knowledge, and more than 71% was considered a good attitude.

After obtaining the formal permission, the study was carried out for a period of 1 week. On the first day, the purpose of the study was explained to the participants, and informed consent was obtained from them. A pre-test was conducted for the participants before the initiation of the awareness programme. The awareness programme was done using a 20 minute video prepared by the investigators, which covered various aspects like digital applications for Covid, the way to log in to apps, and how to handle it further. Post-test was conducted on the seventh day after the intervention. The collected data were analyzed through descriptive and inferential statistics.

Results

Regarding the demographic data of the participants, 53.3% were at the age group of 20-35 years, majority 90% of them were females, 40% of them completed under graduation in nursing, nearly 57% of were Urban health nurses and half of the participants had income below 25,000 INR (Table 1).

Table 1. Description of the Demographic Variables of the Participants

S.no	Demographic Variables		Frequency(f)	Percentage (%)
1	Age (years)	20-35 years	16	53.3
		36-45 years	4	13.4
		46-55 years	7	23.3
		55 years & above	3	10.0
2	Sex	Male	3	10.0
		Female	27	90.0
3	Education	ANM	9	30.0
		GNM	9	30.0
		B.Sc (N)	12	40.0
4	Occupation	Staff nurse	10	33.3
		Urban health nurse	17	56.7
		Health educator / Sector health nurse	3	10.0
5	Income	Below 25,000	15	50.0
		25,000 – 50,000	7	23.3
		Above 50,000	8	26.7

With regard to knowledge level, 76.7% had moderate Knowledge & 23.3% had good Knowledge in pre-test, whereas in the post-test, none of them had poor & moderate Knowledge, 100% had good Knowledge regarding digital apps for Covid-19 among health workers (Table 2). Considering the attitude level, in both pre and post-tests, none of the participants had poor and moderate attitudes, and 100% had good attitudes regarding digital apps for Covid-19 among health workers. (Table 3).

Table 2. Pre & Post- Test Knowledge Level of the Health Workers Regarding Digital Apps of Covid

Si. no	Level of Knowledge	Pre-test		Mean (SD)	Post-test		Mean (SD)	Mean Difference	't'/ 'p' value
		f	%		f	%			
1	Poor	0	0	**12 (3)**	0	0	**19.4 (1.26)**	7.4	13.47
2	Moderate	23	76.7		0	0			
3	Good	7	23.3		30	100			1.699*
Total		30	100		30	100			

*Significant at $p \leq 0.05$

Table 3. Pre and Post -Test Attitude Level of the Health Workers Regarding Digital Apps of Covid

Si.no	Level of Attitude	Pre-test		Mean (SD)	Post-test		Mean (SD)	Mean Difference	't'/ 'P' value
		f	%	**28.4 (1.73)**	f	%	**29.3 (0.95)**	0.9	3.8
1	Poor	0	0		0	0			
2	Moderate	0	0		0	0			3.659*
3	Good	30	100		30	100			
Total		30	100		30	100			

*Significant at $p \leq 0.05$

The pre-test mean score and standard deviation of Knowledge and attitude were 12 (SD-3) and 28.4 (SD -1.73), respectively, and the Post-test mean score and standard deviation of Knowledge and attitude were 19.4 (SD - 1.26), and 29.3, (SD - 0.95). Mean difference was used to find the difference between the pre and post-test scores of Knowledge and attitude. The mean difference of knowledge score was 7.4 & attitude was 0.9. (Table 2 & 3) Karl Pearson's Coefficient correlation was used to find the co-relation between the Knowledge and attitude of the health workers regarding the digital application of Covid and was found to be positively correlated (r = 0.06). (Table 4).

Table 4. Co- Relation between Knowledge and Attitude of the Health Workers Regarding Digital Apps of Covid

Variables	r value	t value	Critical value
Level of Knowledge, Level of attitude	0.06	0.318	0.456**

**Significant at $p \leq 0.01$

Inferential statistics like student paired t-test was used to test the hypothesis (H_{01}), t distribution formula to test the hypothesis of co-relation (H_{02}) and chi-square was used to find the association between the demographic variables on level of Knowledge and attitude among the health workers regarding the digital applications (H_{03}). On testing the hypothesis for the impact of awareness programme on Knowledge and attitude had rejected the hypothesis (H_{01}) at $p \leq 0.05$* (1.69) for knowledge score and for attitude at p = 0.05 (3.659) thus showing that there was a

significant difference in knowledge and attitude after the awareness programme on digital applications among the health workers (Table 2 & 3). Hypothesis testing for the correlation (H_{02}) was found using the t-distribution formula.

Where:

$$t = \frac{r\sqrt{n-2}}{\sqrt{1-r^2}}.$$

Where 'r' = 0.06 was found using Karl Pearson's coefficient correlation, and the 't' distribution value calculated was 't'= 0.318 (critical value = 0.456, $p \leq 0.01$*) (Table 4). Thus, rejecting the hypothesis showed that there was a significant positive correlation between Knowledge and attitude regarding digital apps among health workers at $p \leq 0.01$. Hypothesis H_{03} was accepted while the association test was done using the chi-square test, thus showing that none of the demographic variables was found to be associated with the knowledge and attitude level of health workers at $p \leq 0.05$.

Discussion

The present study aimed to find the impact of the awareness program on the digital applications of Covid had found effective with the mean difference of Knowledge as 7.4 & attitude as 0.9, with 100% of the participants obtaining good Knowledge in the post-test. Though the same type of studies had not been reported, studies like Knowledge of health workers on computer applications and mobile health were presented in the global forum. Studies done on the assessment of Knowledge and attitude on the use of technology for health reported that about 83 % had sufficient Knowledge, and 78.4% had reported a positive attitude [5]. A similar study done in the Arabian nations reported that about 87.3% of the participants had good Knowledge, and most of the participants 51.5% had a positive attitude toward digital medicine [6]. Other study conducted among the university students of Ghana, which had reported that about 61.2% of the participants had Knowledge on utilising androids for health-related programmes [7].

A descriptive study done among Nigerian citizens reported that about 85% of the participants had good Knowledge of the use of mobile applications for health, and 15% were not aware that mobile applications could be used for seeking health care [8]. Similarly, Nigerian stakeholders reported that 56.3% had adequate Knowledge of using the digitalization of health records, and 94% of them had good attitudes in accepting digitalization [9]. A qualitative study done among 35 health workers revealed that most of the health workers showed a positive attitude towards using mobile applications for providing health care [10]. However, those studies were done as the descriptive survey, whereas the present study had been focused on testing the impact of the awareness programme on the digital applications in which the Knowledge and attitude of the participants had been reported in similar.

An experimental study among 29 health workers in which the impact of the mobile application had been tested in terms of Knowledge and attitude reported that the mean pre-test score was 47.5(±9.4) and the average post-test score was 73.1(±10.0); statistically significant with P-value of < 0.0001 [11] which was supporting the results of the present study in which the pre and post-test scores were found statistically significant at $p<0.05$.

In the present study, there existed a positive co-relation between Knowledge and attitude with the 'r-value of 0.06 and significance at $p \leq 0.01$**. A similar study done on the health workers in the hospital in which the investigators intended to assess the co-relation between Knowledge and attitude on Covid 19 had showed that there existed a positive correlation with 'r' 0.28 at $p<0.001$ [12]. A positive linear correlation with $r = 0.161$, $p < 0.05$ was exhibited between Knowledge and attitude among the health workers in a cross-sectional study done in Karnataka, India [13]. A similar study conducted in China stated the controversial view of the co-relation between Knowledge and attitude among

health workers on Covid 19 had exhibited a negative co-relation with r = -0.21, p<0.001 [14].

Although the present study exhibited that none of the demographic variables had been found associated with the post-test knowledge and attitude of the health workers at p = 0.05, In another study presented a significant association with gender and the level of Knowledge at χ^2 = 4.420; p = 0.05 [15]. The study was done only in the selected community areas in Chennai and only the health workers willing to participate were included which could not generalise the study results. A similar type of training programmes can be planned for the health workers for larger groups for better generalization, and other aspects like utilisation of electronic health records, telemedicine, and usage of similar health apps can be focussed.

Conclusion

The study aimed to find the impact of the awareness programme on digital applications of Covid was found effective among the health workers with the mean difference of Knowledge as 7.4 and found statistically significant at $p \leq 0.05$. Though the health workers were using digital applications for Covid care, they found it difficult to answer on a few aspects in the pre-test, whereas after the awareness programme they found it easy in utilising the applications through their devices. Health workers felt free and easy in the technical aspects of utilising the digital applications after the awareness programme. Similar studies can be encouraged on the other health applications for the health workers which can be utilised in their routine public health care.

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Conflict of Interest

There is no conflict of Interest.

Author's Contributions

MD - Manuscript preparation and data collection. RS- Edited and critically evaluated the manuscript, HM – Study conception and finalization of the tool. NC - Data Analysis**.** All authors reviewed the results and approved the final version of the manuscript.

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