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Effectiveness of Digital Media Content on the Behaviour Domain of the Diabetic Patients

G. Padmini Devi

ABSTRACT

The success of diabetes care relies mainly on patients' daily self-care activities and provider's continuous support. Diabetes, therefore, is a disease in which transmission of disease-related knowledge and skills from the patient's perspective will help to build the right attitude in self-management of the disease that can be achieved through education. Hence educating diabetic patients for effective self-management through digital media would be a significant contributor to the metabolic and psychological outcomes of the patients. The study aimed to assess the effectiveness of digital media content on the behavior domain of diabetic patients with two hundred type-2 diabetes respondents from the rural and urban areas of the Guntur district of Andhra Pradesh was conducted. A two months education program based on digital media content in different forms like 90 text, 30 voice messages, and 8 animation modules was developed and disseminated. After the education program, post-intervention changes in the knowledge, skill, and attitude of the respondents was measured with a time gap of two months. The findings revealed that the post-intervention mean score for the knowledge domain scored high in all three areas of information followed by attitude and skill. There existed a highly significant difference at pre and post-intervention with a p-value of 3.29E-06. Further, highly significant difference was also observed among knowledge, skill & attitude of the respondents with a p value of 3.67E-11. Among different areas of information in the KSA domain, the mean score difference was found to be highest for clinical followed by nutrition and for management information. The significant improvement in the KSA domain for all three areas after post-intervention may be due to the dissemination of information by using different content formats such as text, voice messages, and animation modules. Thus, digital education in vernacular language to reach all sorts of patients would be effective for self-management of the disease.

Keywords: Animation, Attitude, Diabetes, Digital media, Knowledge, Skill, Text, Voice messages

INTRODUCTION

Information is cornerstone for effective self-management of the disease thereby reduces the complexity of the diseases. People with diabetes need to be informed about their condition to prevent them from worrying unnecessarily and to allow them to effectively control their condition. They will need a variety of skills and knowledge to enable them to control their condition, sometimes on a day-to-day basis, and modify their approach when circumstances change. The success of diabetes care relies mainly on patients' daily self-care activities and provider's continuous support. Diabetes, therefore, is a disease in which information and knowledge from the patient's perspective has an important role to its management, diabetes self-management education and on-going support are significant contributors to metabolic and psychological outcomes. With this backdrop, the present paper aimed to assess the effectiveness of digital

Lecturer in Home science, Government College for Women (A), Guntur, Andhra Pradesh
Email id: padmini.gopireddy@gmail.com

media content on the behaviour domain (Knowledge, Skill & Attitude) of the diabetic patients.

METHODOLOGY

An exploratory research design with two hundred type-2 diabetes respondents selected randomly from the rural and urban areas of Guntur district of Andhra Pradesh was choosen. List of the respondents was collected from three hospitals of Guntur district. Data collected from the respondents by using a pre-structured interview schedule. The study consisted of three sections viz; Development of digital media content, Execution of digital media content and Statistical tests.

Different digital media content like text, voice messages, and animation modules were developed based on the existing gaps in the knowledge of the respondents towards clinical, nutrition and, management areas of diabetes. Text and voice messages delivered through bulk messaging package by using mobile phones. By using this package messages sent to all 200 samples at a time in their native or vernacular language for better understanding. A total of 90 text and 30 voice messages developed. Out of these 36, text messages and 12 voice messages were knowledge-based, 23 text messages and 10 voice messages were skill based and 31 text messages and 8 voice messages were attitude based. The animated videos were developed based on the existing gaps in the knowledge, skills, and attitude of the respondents towards clinical, nutrition, and management areas. A total of 8 animated modules developed. Diabetes, Types of Diabetes, Body Mass Index, Dietary guidelines, Diabetes complications, Diagnostic tests, Glycemic index, and Exercise were the topics selected for animation, based on the existing behavior domain gaps of the respondents.

For one-month animation, modules disseminated through what's up groups, email and, focused group discussion methods to reach all the respondents. For the second month, text and voice messages were sent to all the respondents through bulk message centre in the vernacular language. Everyday 3, text messages and one voice message sent. In two months, the information was disseminated through different content formats to educate the patients to bring desirable changes in their behavior domains. After the education program, post-intervention changes in the knowledge, skill and attitude of the respondents measured with a time gap of two months.

Mean scores were calculated to know the difference between pre and post intervention. Two- way ANOVA was done to assess the interaction between knowledge, skill and attitude pre and post intervention. Paired t-test was calculated to find out the significant difference of knowledge, skill and attitude of the diabetic patients at pre and post intervention.

RESULTS AND DISCUSSION

The Table 1 indicates the overall change in the behavior domain (knowledge, skill & attitude) of the respondents after intervention of digital media education programme in different areas of information. The mean score for the knowledge domain was found to be high in all the three areas of information with a value of 72.85 followed by attitude domain value of 52.92 and skill domain with a value of 51.74 after intervention. The total mean score in all three domains i.e. KSA post-intervention was high with a value of 177.51 compared to the pre-

Table 1: Overall Change in Behaviour Domain (Knowledge, Skill & Attitude) of the Respondents after Intervention (based on mean scores)

Area of information	Post intervention mean scores			Total	Pre intervention mean scores			Total	Mean difference
	K	S	A		K	S	A		
Clinical	27.51	17.2	16.075	60.785	23.96	15.2	12.35	51.51	9.27
Nutrition	31.1	16.88	18.35	66.33	27.7	14.88	14.55	57.13	9.20
Management	14.24	17.66	18.50	50.4	12.48	16.66	16.65	45.79	4.61
Total	72.85	51.74	52.92	177.51	64.14	46.74	43.55	154.43	23.0

Table 2: Two-way analysis of variance (m=3 observations per cell)

			Factor B		
	Types of information		K	S	A
Factor A	Pre	C	1.29	1.27	2.117
		N	1.35	1.111	2.1207
		M	1.397	1.303	2.3007
	Post	C	1.5625	1.517	2.5625
		N	1.531	1.3785	2.6242
		N	1.556	1.576	2.64

intervention mean score of 154.43. The reason for significant improvement in knowledge may be due to the fact that more number of text, voice messages and animation modules were knowledge based compared to other two domains. Further, it will take more time for people to practice skills imparted related to diabetes, hence the improvement in skills found to be relatively less compared to knowledge and attitude. Among different areas of information in the KSA domain the mean score difference was found to be highest for clinical (9.27) followed by nutrition (9.20) and management (4.61) information. The calculated mean difference was 23.0 between pre and post-intervention. The significant improvement in KSA domain for all three areas after intervention may be due to dissemination of information by using different content formats such as, text, voice messages, and animation modules by using different channels like email, WhatsApp and focused group discussions as the respondents believed that text messages and animation modules can be stored for future reference also. Andriyanto (2019) revealed that the mean of knowledge and attitudes increased from 56.05 to 76.98 and from 22.14 to 33.36, respectively, after the intervention. Similarly, the mean of skills increased from 5.51 to 7.13, while the mean of blood glucose decreased from 238.36 mg/dl to 231.63 mg/dl after the intervention. There were significant differences in knowledge, attitudes, skills (p=0.001), and glucose control (p=0.04) of type-2 diabetes after education.

Two way ANOVA was computed to assess the interaction between variables at pre & post intervention and to assess the change in between variables. In Table 2 analysis was done on two factors where factor A is pre and post intervention and factor B is about behaviour domains i.e., knowledge, skill and attitude. Based on the results of two way ANOVA test from the Table 2 &3 it is revealed that there existed a highly significant difference at pre and post intervention with a p value of 3.29E-06. Further, a significant difference was also observed among knowledge, skill and attitude of the respondents with a p value of 3.67E-11. From these results it could be concluded that there is a remarkable improvement in the knowledge, skill and attitude of the respondents after intervention when educated the patients by using different digital content formats like text, voice messages and animation modules. Chawla *et al.* (2019) indicated that education on various aspects of diabetes, its drugs, dietary and lifestyle modification along with patient education leaflet showed a significant increase of knowledge, attitude and practice of scores (10.28±1.78, 3.46±0.93, 3.14±0.86) respectively at the end of the study compared to control group.

An inference could be drawn from the Table 4 that there was a significant mean difference of 2.90 in the knowledge level of the respondents' pre and post intervention as t value was found significant. The findings

Table 3: Analysis of variance for interaction between knowledge, skill & attitude pre and post intervention

Source of Variation	Two way – ANOVA Analysis					
	SS	df	MS	F	P-value	F crit
Pre and post intervention	0.401498	1	0.401498	65.68672	3.29E-06	4.747225
K,S,A	3.949311	2	1.974655	323.062	3.67E-11	3.885294
Interaction	0.041007	2	0.020504	3.354484	0.069629	3.885294
Within	0.073348	12	0.006112			
Total	**4.465163**	**17**				

Table 4: Change in overall knowledge skill and attitude of the respondents post intervention

Domain	Mean Post intervention	Mean Pre intervention	Difference (% increase)	Paired t-test result p-value
Knowledge	24.283	21.380	2.90(11.95%)	0.036
Skills	17.24667	14.28	2.9667(17.20%)	0.0444
Attitude	17.64167	14.51667	3.125(17.71%)	0.039

have similarity with other researchers who used multimedia software for diabetes education. Zhang (2019) inferred that the implementation of the self-care program with multimedia software support resulted in improvement in patients self-care behaviors' in the experimental group, but no changes observed in the control group. There exists a significant difference between the mean scores of the test and the control group at pre and post-intervention. There was a significant mean difference of 2.96 in the skills of the respondent's pre and post-intervention as t value was found significant at < 0.05 level of probability. The results are in confirmation with Farahani *et al.* (2016) revealed that implementation of the self-care program with multimedia software support resulted in improvements in patients' self-care behaviors in the experimental group, whereas these behaviors had not significant changes in the control group after eight weeks. There was a significant difference in the mean score of knowledge in both the experiment and control groups before and after the intervention (p=0.02). An inference could be drawn that there was a significant mean difference of 3.12 in the overall attitude of the respondent's pre and post intervention as t value was found significant at 0.05 level of probability. The respondents responded positively to the information disseminated through digital media as the content delivered was in a more convincing and thought provoking manner. Muchiri *et al. (*2016), indicated that the patient's mean score knowledge on diabetes among the intervention group was higher in the intervention group compared to the control group after 6 and 12 months of intervention and the scores were below 50 per cent. But, the patient's attitude towards diabetes was significantly higher at 12 months. Similar results by Garima (2016) and Saleh *et al.* (2017) were reported.

CONCLUSION

It could be concluded that educating the patients by using modern digital media content formats like text, voice messages, and animated modules in local language enhanced the knowledge, skill, and attitude of the respondents towards the disease for effective self-management. Further, text messages and animation modules can be stored and used by the respondents for future reference also. They can share the information with their family members, friends, and co-diabetics for better self-management of the disease. Thereby the chain of sharing and accessing the information is not only confined to the respondents of the study area but other people also. Moreover, animation is in image, audio, text and video mode these can be displayed at the hospitals for the patients to create awareness about the disease.

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