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Alternative and Complementary Therapies for Management of Diabetes Mellitus: Experience of Nursing Scholars from a Comprehensive Skill-Based Workshop

Swapnil Rahane*, Ravindra H.N and Dharti Patel
[1, 2] Parul Institute of Nursing, Parul University, Vadodara, Gujarat.
[3]Post Graduate Student, Department of Medical-Surgical Nursing, Parul Institute of Nursing, Parul University, Vadodara, Gujarat.
*Email ID: swapnilvitthal93@gmail.com

ABSTRACT

Alternative and complementary therapies for diabetes mellitus refer to any type of treatment or practice that falls outside of traditional western medicine. Besides traditional medical therapy, acupuncture, herbal remedies, yoga, and nutritional supplements can all help relieve diabetes mellitus symptoms and improve quality of life. The main objective is to determine the effectiveness of skill-based workshop on Complementary and alternative therapies for Diabetes Mellitus. An evaluative approach with one group pre-post-test research design was used. There were 150 participants in this study who attended a skill-based workshop on alternative and complementary therapies for diabetes mellitus at Parul Institute of Nursing at Parul University, Vadodara, Gujarat, India. Socio-demographic, Self-structured knowledge questionnaire, and the Perception Scale tool was used in this study. Data collection, knowledge and Perception were assessed before and after the execution of Skill-Based workshop on CAT for Diabetes. The session was last for 60 minutes. Data were analysed by using SPSS software 25.0. The study showed statistically significant differences in sum score of the Pre-test and after executing skill-based workshop on CAT for Diabetes in knowledge score [Pre-test: 9.15 (3.312), Post-test: 14.09 (2.371) (p<0.05)] for perception score [Pre-test: 38.11(5.611), Post-test: 39.65 (5.128) (p<0.05)]. There was a significant association between sociodemographic variables with knowledge score found for gender and for the perception previous knowledge about diabetes Mellitus variables of participants. The main inference of this present study suggested that the Skill-Based Workshop was effective in improving the knowledge and perceptions of participants regarding alternative and complementary therapies for diabetes mellitus.

Keywords: *Alternative Therapies, Complementary Therapies, Diabetes Mellitus, Skill-Based Workshop, Knowledge, and Perception.*

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INTRODUCTION

Skill-based workshops involve planning, implementing, and assessing abilities acquired through knowledge-based learning techniques. It inspires students to think critically, examine ideas, and put their knowledge to good use. The purpose of this cutting-edge and popular teaching method is to cultivate students' autonomy of thought and to prepare them for upcoming difficulties [1].

Diabetes mellitus is a chronic, lifelong disease that affects a person's metabolism. Diabetes mellitus is also known as hyperglycemia since both relative and absolute insulin receptors are activated. Diabetes mellitus occurs as a result of an intricate interplay between environmental conditions and genetic predispositions.[2]

In almost all countries, diabetes mellitus is one of the most prevalent chronic diseases due to changing lifestyles that result in less physical activity and increased fat accumulation. Increasingly, it is becoming more prevalent and more significant. The proportion of adults with diabetes is expected to increase by 69% in emerging nations between 2010 and 2030. Currently, there are 21.3 million diabetics in Indonesia, and this number is expected to double by 2030 [3].

Alternative and complementary therapies include a wide range of clinical treatments that are not included in mainstream medicine. The Indonesian Ministry of Health divides complementary and alternative therapy into four categories: skill-based therapy, biologically-based therapy, spiritual therapy, and supernatural therapy. The complementary and alternative therapies that are most commonly used and researched in the treatment of diabetes are those that are biologically based. According to the Indonesia

Socioeconomic Survey, the number of Indonesians using complementary and alternative therapies is increasing every year [4].

The use of herbal remedies by diabetic patients is increasing, whether they are single herbs or polyherbal preparations. In the absence of adequate information regarding the medication, adverse reactions may occur. Since herbal medicine supplements have no known adverse effects on the body, they must be approved by the Food and Drug Administration (FDA), Maryland, USA. Due to the fact that these are typically only available over the counter, it is difficult to manage this type of concurrent medication use under the current system. The study analyzes the benefits and drawbacks of using herbal medicines in conjunction with modern treatments.[2]

In diabetes patients, complementary and alternative therapies are used at a rate that is 1.6 times higher than in non-diabetics. Numerous studies have revealed that users of complementary and alternative therapies report poorer health and suffer from illnesses related to chronic pain, disability or psychological damage. Previous studies have indicated that people with type II diabetes who use complementary and alternative therapies may require fewer traditional medical treatments. Further, several studies have indicated that the use of complementary and alternative therapies is associated with a decrease in preventative care utilization.[5]

Singh et al. reported that 91 out of 100 respondents were taking medication to treat diabetes, while nine relied solely on diet and herbal remedies. A total of 64 out of 91 individuals (70.32%) received OHA recommendations, possibly 31 (48.43%), possibly as blends 22 (34.37%), possibly in addition to insulin 11 (17.18%). In 27 out of 91 patients (29.67%), insulin alone was recommended due to the ineffectiveness of OHAs. In addition to conventional diabetes medications, 5% of people are using natural remedies. The majority (36/45) of these were either performed on their own or with help from friends or family. Ayurvedic physicians are only consulted by 5% of patients before beginning treatment.

Doctors are unaware of this fact 98% of the time. Out of 45 patients, only one disclosed information about the prescriber, and none of the patients received specific instructions regarding their use as an organic medication. There is a possibility of hypoglycemia in 58% of people. These symptoms include giddiness, light-headedness, cold sweats, and a feeling of excessive hunger.

Approximately 58% of people discovered the possibility of hypoglycemic symptoms, which included giddiness and light-headedness, cold sweats, and a sensation of hunger pangs. In spite of this, no evidence of hypoglycemic coma was observed. Among 39 patients (67.24%) who were taking herbal supplements and OHAs concurrently, 19 (32.76%) experienced hypoglycemic symptoms. .[2]

A review of the literature indicates that complementary and alternative therapies are associated with reduced medication adherence in patients with type 2 diabetes. The likelihood of poor adherence to prescribed diabetes medications is 6.16 times higher in T2DM patients who do not use complementary and alternative therapies. Instead of disregarding complementary and alternative therapy usage among patients, health professionals should be more knowledgeable about complementary and alternative therapies, receive better complementary and alternative therapy training, and assist patients in making informed decisions regarding complementary and alternative therapies.[6]

MATERIALS AND METHOD

The study was conducted using an evaluative approach and a one group pre-post-test research design. Participants in this study included 150 nursing students from Parul Institute of Nursing, Parul University, Vadodara, Gujarat, India, who attended a skill-based workshop on Alternative and complementary therapies for diabetes mellitus. A conceptual framework model based on Bertanlanffy's General System Theory was implemented for the study. CAT for Diabetes mellitus Knowledge and Perception were evaluated using a self-structured knowledge questionnaire and self-structured perception scale. During the 60-minute theory session, participants were provided with information on how to prevent, control, and manage hyper and hypoglycemia.

Inclusion Criteria

The students studying at the Parul Institute of Nursing, Vadodara, who have chosen to specialize in Medical-Surgical Nursing were eligible to apply for the program.

Data Collection

In order to collect data, the researcher developed a tool divided into three sections. There are three sections in the questionnaire: 1) socio-demographic information 2) self-structured knowledge questionnaire 3) self-structured perception scale on CAT for diabetes mellitus. The researcher explained to the participants the purpose and importance of the study.

Data Analysis

The data analysis was performed using SPSS Version 25.0 (Statistical Package for the Social Sciences). The data were analyzed using descriptive and inferential statistics. Demographic characteristics were

presented using descriptive statistics. In order to assess the level of knowledge and perception, we used the frequency, percentage, mean, and standard deviation. Inferential statistics were used (Unpaired 't'-test to evaluate the effectiveness of a Skills-based workshop and a chi-square test to determine the association between the pre-test levels of knowledge and perception of CAT for Diabetes and partner-demographic variables).

RESULT

Section I

Findings related to the demographic data of the participants.

This section deals with selected demographic variables of participants.

Table: 1.Frequency Distribution of Participants as per Demographic Variables for Pre-test. [**n=150]**

Sr. No.	Demographic Variable	Frequency	Percentage (%)
1	**Age**		
	18-20 Years	104	69.3%
	21-24 Years	44	29.3%
	25-28 Years	2	1.3%
2	**Gender**		
	Male	30	20%
	Female	120	80%
3	**Religion**		
	Hindu	131	87.3%
	Muslim	16	10.7%
	Christian	2	1.3%
	Other	1	0.7%
4	**Type of Residential Area**		
	Urban	110	73.33%
	Rural	40	26.66%
5	**Education Status**		
	Undergraduate	134	89.33%
	Postgraduate	8	5.33%
	Other	8	5.33%
6	**Previous Knowledge About Diabetes Mellitus**		
	Yes	134	89.3%
	No	16	10.7%
7	**Do You think alternative therapies are useful in prevention and management of Diabetes mellitus**		
	Yes	119	79.3%
	No	31	20.7%

As shown in Table: 1.1, the majority of participants, 104 (69.3%), were in the 18–20-year age group, 44 (29.3%) were in the 21–24-year age group and 2 (1.3%) were in the 25–28-year age group. Moreover, the data demonstrate that 120 (80%) of the participants were females, and only 30 (20%) were males.

According to the data, 131 (87.3%) participants belong to the Hindu religion, 16 (10.7%) to the Muslim religion, 2 (1.3%) to the Christian religion, and 1 (0.7%) to any other religion. The total population was 110 (73.33%) from the urban area and 40 (26.77%) from the rural area. Regarding educational status, 134 (89.33%) were undergraduate students, 8 (5.33%) were postgraduate students, and 8 (5.33%) were other students.

There were 134 participants (90.3%) with prior knowledge of Diabetes Mellitus, whereas 16 participants (10.7%) did not have any prior knowledge. Based on the findings of this study, 119 (79.3%) participants believe that alternative therapies are useful in the prevention and management of diabetes mellitus, while 31(20.7%) participants believe they are not helpful.

In **Table: 1.2**, we find that the majority of participants, 86(57.3%), belonged to the 18–20-year age group, 62(41.3%), to the 21–24-year age group, and 2 (1.3%) to the 25–28-year age group. The data also indicate that 131 (87.3%) of the participants were females and only 19 (12.7%) were males.

Table: 1.2 Frequency Distribution of participants as per Demographic Variables for Post-test.n=150

Sr. No.	Demographic Variable	Frequency	Percentage (%)
1	**Age**		
	18-20 Years	86	57.3%
	21-24 Years	62	41.3%
	25-28 Years	2	1.3%
2	**Gender**		
	Male	19	12.7%
	Female	131	87.3%
3	**Religion**		
	Hindu	140	93.3%
	Muslim	7	4.7%
	Christian	2	1.3%
	Other	1	0.7%
4	**Type Of Residential Area**		
	Urban	92	61.3%
	Rural	58	38.7%
5	**Education Status**		
	Undergraduate	132	88%
	Postgraduate	14	9.3%
	Other	4	2.7%
6	**Previous Knowledge About Diabetes Mellitus**		
	Yes	139	92.7%
	No	11	7.3%
7	**Do You think alternative therapies are useful in the prevention and management of Diabetes mellitus**		
	Yes	132	88%
	No	18	12%

In addition, 140 (93.3%) of respondents followed Hindu religion, 7 (4.7%) followed Islam, 2 (1.3%) followed Christianity, and 1 (0.7%) followed another religion. 92 residents (61.3%) lived in the urban area and 58 residents (38.77%) lived in the rural area. As far as educational status is concerned, 132 (98%), 14 (9.33%), and 4 (2.7%), were undergraduates.

A total of 139 participants (92.7%) had prior knowledge of diabetes mellitus, and 11 participants (7.3%) did not. There are 132 (88%) participants who believe alternative therapies are useful in preventing and managing diabetes mellitus and 18 (12%) participants who believe they are not.

Section II

Findings related to knowledge and perception of participants regarding Alternative and complementary therapy for Diabetes mellitus before and after the Skill-Based Workshop.

Table No. 2.1 shows the comparison of the pre-test and post-test knowledge scores of participants. From the data, it is noteworthy that 5 (3.3% of participants) had poor scores, 104 (69.3%) had average scores, 38 (25.3%) had good knowledge and 3 (2%) had excellent knowledge, whereas 91 (60.7%) participants had poor scores, 57 (38%) participants had average knowledge, 2 (1.3%) participants had good knowledge, and none of the participants had excellent knowledge.

Table No 2.1 - Comparison of Pre and Post-test Knowledge Scores of participants [n=150]

Knowledge score	Pre- Test	Post- Test
	Frequency (%)	Frequency (%)
Poor Score (≤10)	91(60.7%)	5(3.3%)
Average Score (11- 15)	57 (38%)	104 (69.3%)
Good Score (16 – 20)	2 (1.3%)	38 (25.3%)
Excellent Score (21 – 25)	0 (0%)	3 (2%)

A comparison of perception scores for participants is shown in **Table 2.2.** Data indicate that 1 (0.7%) participant in the posttest had a Low Score, 28 (18.7%) participants had a Medium Score, and 121 (80.7%) participants had a High Score, whereas 146 (73.7%) participants in the pretest had a Poor Score, 54 (27%) participants had an Average Score, and none had a Good or Excellent Score.

Table No 2.2 - Comparison of Pre and Post-test Perception Scores of Participants [n=150]

Skill score	Pre- Test	Post- Test
	Frequency (%)	Frequency (%)
Low (≤25)	1 (0.7%)	1 (0.7%)
Medium (26 – 35)	51 (34%)	28 (18.7%)
High (36≥)	98 (65.3%)	121 (80.7%)

Based on the data presented in **Table No 3.1,** a comparison is made between the participants' knowledge scores prior to and following the post-test. Compared to the pretest, the knowledge score of participants improved in the posttest following the intervention of the Skill-Based Workshop on Alternative and Complementary Therapies for Diabetes Mellitus. As per the unpaired 't' test calculated 't' value at 298 degrees of freedom (14.852) is significant at the level of 0.05. Therefore, the Skill-Based Workshop significantly increased knowledge among the participants.

Table No 3.1 –Comparison of overall Knowledge Scores of participants on Alternative and complementary therapy for Diabetes mellitus [n=150]

Knowledge Score	Mean Score	SD	df	Calculated 't' Value	't' Table Value	p- value
Post test	14.09	2.371	298	14.852	**1.97**	0.05*
Pre test	9.15	3.312				

df- degree of freedom
SD- Standard Deviation

Table No 3.2 shows the comparison between the pretest and posttest perception scores of participants. Compared to the pretest, the Perception Score of participants improved post-intervention of the Skill-Based Workshop on Alternative and Complementary Therapies for Diabetes Mellitus. As per the unpaired 't' test calculated 't' value of 2.492 (2.997) at a degree of freedom of 298 is significant at a level of 0.05. A skill-based workshop significantly improved participants' perception.

Table No 3.2 –Comparison of overall Perception Scores of participants on Alternative and complementary therapy for Diabetes mellitus [n=150]

Perception Score	Mean Score	SD	df	Calculated 't' Value	't' Table Value	p-value
Post test	39.65	5.128	298	2.492	1.97	0.05*
Pre test	38.11	5.611				

df- degree of freedom
SD- Standard Deviation

Section III

As illustrated in **Table No. 4.1,** the association between demographic variables and knowledge scores. Moreover, the calculated P value exceeds the significance level of 0.05, so the H0 hypothesis is accepted. Demographic variables such as age, religion, residential area, education, and whether alternative therapies are effective in preventing and managing diabetes mellitus as well as prior perceptions of diabetes mellitus were not associated with the perception score of the participant, whereas gender was associated with the perception score. Therefore, the hypothesis was rejected.

Table: 4.1 Findings related to association of the demographic variables with pretest knowledge score.n=150

Sr. No.	Demographic Variable	F	Knowledge Score			χ^2 Value	df	p-value
			Poor	Average	Good			
1	**Age**							
	18-20 Years	104	66	37	1	1.416	4	0.841
	21-24 Years	44	24	19	1			
	25-28 Years	2	1	1	0			
2	**Gender**							
	Male	30	18	10	2	8.218	2	0.016*
	Female	120	73	47	0			
3	**Religion**							
	Hindu	131	77	52	2	2.735	6	0.841
	Muslim	11	5	0	16			

	Christian	2	2	0	0			
	Other	1	1	0	0			
4	**Type of Residential Area**							
	Urban	110	68	41	1	0.704	2	0.703
	Rural	40	23	16	1			
5	**Education Status**							
	Undergraduate	134	82	50	2	2.86	4	0.582
	Postgraduate	8	6	2	0			
	Other	8	3	5	0			
6	**Previous Knowledge About Diabetes Mellitus**							
	Yes	134	82	50	2			
	No	16	9	7	0	0.452	2	0.498
	Do You think alternative therapies are useful in prevention and management of Diabetes mellitus							
7	Yes	119	74	44	1	1.428	2	0.49
	No	31	17	13	1			

*- *Significant*

Table No. 4.2 shows the association between demographic variables and knowledge scores. It also shows that the calculated P value exceeds the significance level of 0.05, thus we accept the H0 hypothesis. For the demographic variables such as age, gender, religion, residential area, education, and whether alternative therapies are useful for preventing and managing diabetes mellitus, the Perception score of the participant is not associated with the perception score, whereas the prior perception of diabetes mellitus is associated with the perception score, thus the hypothesis is rejected.

Table: 4.2 Findings related to association of the demographic variables with pretest Perception score.n=150

Sr. No.	Demographic Variable	F	Perception score			χ^2 Value	df	p-value
			Low	Medium	High			
1	**Age**							
	18-20 Years	104	0	38	66	3.647	4	0.456
	21-24 Years	44	1	12	31			
	25-28 Years	2	0	1	1			
2	**Gender**							
	Male	30	0	10	20	0.265	2	0.876
	Female	120	1	41	78			
3	**Religion**							
	Hindu	131	1	42	88	2.885	6	0.823
	Muslim	16	0	8	8			
	Christian	2	0	1	1			
	Other	1	0	0	1			
4	**Type of Residential Area**							
	Urban	110	1	35	74	1.179	2	0.555
	Rural	40	0	16	24			
5	**Education Status**							
	Undergraduate	134	1	47	86	1.92	4	0.75
	Postgraduate	8	0	3	5			
	Other	8	0	1	7			
6	**Previous Knowledge About Diabetes Mellitus**							
	Yes	134	0	47	87	8.834	2	0.012*
	No	16	1	4	11			
	Do You think alternative therapies are useful in the prevention and management of Diabetes mellitus							
7	Yes	119	0	42	77	4.157	2	0.125
	No	31	1	9	31			

*- *Significant*

DISCUSSION

The present study aimed to assess the impact of a Skill-Based Workshop on the knowledge and perceptions of participants regarding alternative and complementary therapies for diabetes mellitus. With the aid of recent research findings, Laura K. Triantafylidis et al. performed a study on the treatment of diabetes in

older individuals using an interactive workshop in 2019. 30 people attended the session, 70% of them were from the medical profession and 30% from the pharmacy. The percentage of learners who reported feeling more confident following the session increased from 55% to 97% (p .05), proving the program's efficacy in this regard. The average score on the knowledge evaluation rose from 61% to 80% (p .05), showing that all students had improved their knowledge. The clinical tool package was especially helpful, according to the trainees, who also gave favourable feedback [7].

This is in line with the results of similar studies, which have also reported the effectiveness of educational interventions in improving healthcare professionals' knowledge of complementary and alternative therapies.

Another favorable research study, carried out in 2009 by Andrew Robert Hoellein et al., discovered that third-year medical students' knowledge and clinical abilities were enhanced by a 4-hour workshop on complementary and alternative medicine (CAM) employing standardized patients (SP). Over the course of two academic years, the workshop was presented to 12 of 24 rotation groups, with 92 students taking part and 94 not. On CAM-specific SP checklist items (58% vs 36.6%, P.0001), the post-SP encounter written exercise (76.9% vs 63.3%, P.0001), and seven CAM written test items (84.8% vs 76.3%, P.0001), workshop participants substantially outperformed non-participants. The study came to the conclusion that including SPs in the CAM, the workshop helps medical students learn and use CAM information and differentiate counselling techniques [8].

Furthermore, the present study found that the majority of participants had average knowledge scores before attending the workshop, consistent with the findings of previous studies.

CONCLUSION

In conclusion, the present study suggests that the Skill-Based Workshop was effective in improving participants' knowledge and perceptions regarding alternative and complementary therapies for diabetes mellitus. Nonetheless, this study, along with previous research, highlights the importance of ongoing training and education for healthcare professionals in this area. The long-term effects of educational interventions on the practice of healthcare professionals regarding complementary and alternative therapies could be studied in future research.

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