

The purpose of this study includes:

Implementing ANOVA and other statistical measures to test whether there is (not) a change in the diabetes patient's self-efficacy because of the intervention activities between the "post" and "exit".

Methodology:

Method 1: We have used the fundamental statistical methods that include ANOVA, Descriptive statistics, P value. To assess the importance of the difference in the reliability of the analysis, we used a reliability test.

Method 2: To evaluate the study, Principal Component Analysis (PCA), Pearson's correlation matrix (PCM) was applied. PCA is a method for data reduction that shows the ability of parameters and their level of trust in sample datasets.

Whole analysis was done by using **SPSS version 16.0** and **MS Excel**.

Result and Discussion:

Repeated Measures ANOVA:

Repeated Measures ANOVA is almost the same as ANOVA, with one key difference being that we are measuring linked groups, not individual groups. Repeated steps are named since the same group of Participants are assessed again and again. ANOVA's repetitive steps are close to a simple multivariate design. The same participants are evaluated over and over in both experiments. However, the same characteristic is calculated in a different state with repeated measurements.

Null Hypothesis: There is not a change in their self-efficacy because of the intervention activities between the "post" and the "exit"?

Alternative Hypothesis: There is a change in their self-efficacy because of the intervention activities between the "post" and the "exit"?

Table 1: Repeated Measures ANOVA

<i>Source of Variation</i>	<i>SS</i>	<i>df</i>	<i>MS</i>	<i>F</i>	<i>P-value</i>	<i>F crit</i>
----------------------------	-----------	-----------	-----------	----------	----------------	---------------

Rows	984.745	77	12.7889	15.34709	4.2E-18 0	1.281182
Columns	2897.727	90	32.19696	38.63739	0.03814	1.259446
Error	5774.845	6930	0.833311			
Total	9657.316	7097				

Sum of squares, df=degree of freedom, MS=Mean of squares.

Scale	F test	Prob
Social, emotional, food Belief	2.176	0.008
Social, emotional, food Action	3.209	0.112
Exercise/Bl Glucose- Belief	8.814	0.667
Exercise/Bl Glucose- Action	7.707	1.904
Health Professionals and Planning Belief	2.116	0.009
Health Professionals and Planning Action	1.009	0.002

Comment: In this case we are not interested in the results for the Rows, only for the Columns, which tell us the variation in response time-based intervention activities between the "post" and the "exit". **Since this p-value is less than 0.05, we reject the null hypothesis and accept alternative hypotheses** also conclude that there is a statistically significant difference/change in their self-efficacy because of the intervention activities between the "post" and the "exit". So, the Results showed that there are statistically significant differences in response time.

Table 2: Reliability Statistics

Cronbach's Alpha	N of Items
.950	78

Comment: In the course of performing the statistical analyses, it became apparent that there

were statistically important variations in the scores of participants. Alpha 0.975% means, there is 5% chance of the suggested answer not accurate Alpha= 0.0950< 0.7

Table 3: Mean and Standard Deviation Scores for all Items

	Mean Belief	SD Belief	Mean Action	SD Action
Avoid overeating or missing meals when watching TV.	4.23	1.007	3.71	1.297
Avoid overeating or missing meals when happy or relaxed.	4.20	1.061	3.73	1.196
Manage diabetes when disagreeing with family or a friend.	4.32	1.058	3.86	1.272
Avoid overeating or missing meals when angry or upset.	4.33	1.205	3.70	1.340
Ask for support from family/friends in keeping diabetes routine.	4.07	1.247	3.83	1.255
Manage diabetes plans when feeling sad.	4.33	1.060	3.58	1.286
Plan how to handle delayed meals.	4.34	1.019	3.83	1.201
Resist overeating or missing meals when I am anxious or nervous.	4.22	1.256	3.55	1.296
care of my diabetes when I am frustrated.	4.48	.920	3.70	1.273
Deal with my feelings about living with diabetes.	4.43	.941	3.92	1.179
Manage my diabetes when on holidays.	4.23	1.130	3.49	1.418
Discuss concerns about diabetes complications health professionals.	4.64	.689	4.22	1.194
Ask a health professional to explain changes in diabetes care needed.	4.55	.803	4.37	.9220
Know when to call a health professional about foot problems.	4.51	.920	4.40	.9730
Tell health professionals when I do not agree with their suggestions.	4.17	1.272	3.97	1.227
Know about <i>lab tests</i> for diabetes.	4.57	.881	4.34	1.041
Have a plan about what I need to do in case I become ill.	4.49	.966	4.09	1.034
Stop a low blood sugar reaction when having one.	4.67	.786	4.27	1.070
Figure out what to do when blood sugar is low.	4.63	.886	4.39	1.027
Prevent low blood sugar reactions when exercising.	4.34	1.072	3.88	1.221
Know about medications that I take for diabetes	4.61	.770	4.34	1.112
Exercise when I do not feel like it.	4.23	.915	3.04	1.414
Follow a diabetes plan when your daily routine changes.	4.41	.985	3.64	1.095
Fit diabetes plan into usual lifestyle.	4.54	.776	3.82	1.222
Figure out what to do when blood sugar is high.	4.64	.750	4.17	.909
Exercise several times a week.	4.41	.974	3.30	1.443
Feel sure of my ability to manage diabetes	4.47	.895	3.89	1.094
Be active when feeling tired.	4.03	1.084	3.25	1.339
Do activities that I enjoyed while taking care of my diabetes.	4.32	1.138	3.85	1.266
Recognize when blood sugar is high.	4.60	.771	4.11	.988
Take care of myself and my diabetes.	4.67	.840	3.95	1.073
Be active when there are a lot of demands t home or at work	4.21	.989	3.36	1.272
Apply proper lotion to feet.	4.05	1.354	3.95	1.208
Cut toenails the right way.	4.29	1.085	4.10	1.223
Check feet every day.	4.24	1.073	4.11	1.143
Stay on my eating plan when people around not know I have diabetes.	4.43	.918	3.85	1.231
Test blood when away from home.	4.33	1.101	3.80	1.251
Stay on my meal plan when people around not know that have diabetes.	4.39	.877	3.82	1.079
Exchange one food for another in the same food group.	3.74	1.429	3.53	1.338

Comment: For each item (question) in the dataset, mean and standard deviation scores are given. In order to understand the questions of respondents, it might be beneficial to individually evaluate the products. Scores on individual items will explain the expectations of the respondent and their capacity to perform or communicate that skill.

Table 4: Factor Analysis Results:

Scale 1: Managing Social, Emotional and Food-Related Aspects:	Factor Extraction
Avoid overeating or missing meals when watching TV.	.714
Avoid overeating or missing meals when happy or relaxed.	.768
Manage diabetes when disagreeing with family or a friend.	.817
Avoid overeating or missing meals when angry or upset.	.739
Ask for support from family/friends in keeping diabetes routine.	.788
Take care of my diabetes when I am frustrated.	
.770	
Manage diabetes plans when feeling sad.	.742
Deal with my feelings about living with diabetes.	.813
Be active when feeling tired.	.818
Stay on my eating plan when people around me do not know that I have diabetes.	.788
Scale 2: Communicating with Health Professionals and Planning	
Plan how to handle delayed meals.	.862
Discuss concerns about diabetes complications with health professionals.	.863
Ask a health professional to explain why a change in diabetes care is needed.	.833
Know when to call a health professional about foot problems.	.840
Tell health professionals when I do not agree with their suggestions.	.775
Have a plan about what I need to do in case I become ill.	.817
Follow a diabetes plan when daily routine changes.	.859
Fit diabetes plan into usual lifestyle.	.686
Scale 3 Managing Low Blood Sugars	
Stop a low blood sugar reaction when having one.	.839
Figure out what to do when blood sugar is low.	.859
Stay on my meal plan when people around me do not know that i've diabetes.	.824
Prevent low blood sugar reactions when exercising.	.818
Figure out what to do when blood sugar is high.	
.754	
Recognize when blood sugar is high	.697
Test blood when away from home	.802
Scale 4 Managing Diabetes Related To Exercise, Blood Glucose And Prevention.	
Resist overeating or missing meals when I am anxious or nervous.	.862
Manage my diabetes when on holidays.	.773
Know about <i>lab tests</i> for diabetes.	.859
Know about medications that I take for diabetes.	.744
Exercise when I do not feel like it.	.767
Exercise several times a week.	.798
Feel sure of my ability to manage diabetes.	.778
Do activities that I enjoyed while taking care of my diabetes.	.825
Be active when there are a lot of demands at home or at work.	.833
Exchange one food for another in the same food group.	.811
Scale 5 integrating Knowledge And Day To Day Care.	
Take care of myself and my diabetes.	.800
Apply proper lotion to feet.	.744
Cut toenails the right way.	.778
Check feet every day.	.832

Extraction Method: **Principal Component Analysis.**

Comment: The section of the manual on factor analysis will explain the mechanism from which the datasets were derived. The key factor analysis of the variable that was completed on the convenience sample where Eigenvalues were set to greater than 1

References:

The image displays two software windows. The top window is an Excel spreadsheet titled 'ANOVA' with the following data:

Source of Variation	SS	df	MS	F	P-value	F crit
Rows	984.745	77	12.7889	15.34709	4.2E-180	1.281182
Columns	2897.727	90	32.19696	38.63739	0.3814	1.259446
Error	5774.845	6930	0.833311			
Total	9657.316	7097				

The bottom window is the IBM SPSS Statistics Viewer, showing the 'Factor Analysis' output. The extraction method is 'CORRELATION'. The following table shows the communalities for 18 questions:

Question	Extraction
Question 1	.815
Question 2	.714
Question 3	.830
Question 4	.768
Question 5	.816
Question 6	.817
Question 7	.829
Question 8	.739
Question 9	.787
Question 10	.788
Question 11	.818
Question 12	.742
Question 13	.749
Question 14	.862
Question 15	.670
Question 16	.812
Question 17	.749
Question 18	.770

