SMART Hearts: Using Motivational Interviewing to Increase Cardiac Rehab Attendance
Part Two Results

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Part I of the evidenced based project titled, SMART Hearts: Using Motivational Interviewing to Increase Cardiac Rehab Attendance Rates analyzed the relationships between the variables of motivational interviewing and its impact on cardiac rehab attendance, depression scores. The questionnaires used are the Patient Health Questionaire-9 (PHQ-9) to assess depression symptoms and the Dartmouth Coop Questionnaire to assess functional quality of life. Part II was concluded after all participants completed cardiac rehabilitation (ie. 36 sessions). The data was analyzed using the same project procedure and methods. Data analysis sought to answer the question: Is there a significant difference between depression scores and quality of life scores before and after the intervention of motivational interviewing and goal setting? The statistical test used to analyze the data is two-tailed paired samples *t*-test to compare the difference between two mean scores from the pre and post PHQ-9 and Dartmouth Coop. The Cohen's D test was also used to calculate the effect size.

Descriptive Statistics

Descriptive statistics were used to describe the sample and outcome variables. The summary statistics were calculated for Age, Pre-Depression scores (Pre_PHQ9TS), Pre-Dartmouth Coop Scores (Pre_DartTS), Post-Depression scores (Post_PHQ9TS), Post Dartmouth Coop Scores (Post_DartTS), and Total Cardiac Rehab Attendance(CR_totalattendance). The average age of the sample is 70.17 ($SD = 8.62$) and the ages range from 44 to 86 years of age. The average number of CR sessions attended is 23.94 ($SD = 12.19$) and the range of sessions attended is 1 to 36 sessions attended. The average Pre-Depression (Pre_PHQ9TS) score is 3.82 ($SD = 3.22$) and the Pre-Depression scores range from 0 to 14 points. The average Post-Depression (Post_PHQ9TS) score is 2.41 ($SD = 3.84$) and the Post-Depression scores range from

0 to 16 points. The average Pre-Dartmouth Coop (Pre_DartTS) scores is 21.07 ($SD = 4.49$) and

the pre quality of life scores is from 11 to 32 points. The average Pos-Dartmouth Coop

(Post_DartTS) scores is 17.00 ($SD = 5.14$) and the post quality of life scores range from 9 to 30

points. The summary statistics can be found in Table 1.

Table 1

Summary Statistics Table for Interval and Ratio Variables

Variable	*M*	*SD*	*n*	Min	Max	*Mdn*	Mode
Age	70.17	8.62	60	44.00	86.00	70.00	70.00
CR_attendance	16.15	8.95	61	1.00	36.00	15.00	19.00
CR_totalattendance	23.94	12.19	54	1.00	36.00	29.00	36.00
Post_DartTS	17.00	5.14	38	9.00	30.00	16.50	13.00
Post_PHQ9TS	2.41	3.84	39	0.00	16.00	2.00	2.00
Pre_DartTS	21.07	4.49	61	11.00	32.00	21.00	21.00
Pre_PHQ9TS	3.82	3.22	61	0.00	14.00	3.00	2.00

Note. '-' denotes the sample size is too small to calculate statistic.

Results

A two-tailed paired samples *t*-test was conducted to examine whether the mean difference

of Pre-Depression scores and Post-Depression Scores was significantly different from zero. The

result of the two-tailed paired samples *t*-test was significant based on an alpha value of 0.10,

$t(38) = 1.74, p = .091$. This project is like an exploratory pilot study to generate a hypothesis. For

the purposes of this study, due to the importance of detecting small to moderate differences with

a small sample size (p values >0.05 but <0.10 are referred to as trend); therefore, significance

was tested at the p <0.10 (Fugate Woods Lentz, Mitchell, Heitkemper & Shaver, 1997). This

finding suggests the difference in the mean of Pre-Depression scores and the mean of Post-

Depression scores was significantly different from zero. Motivational interviewing and goal

setting decreased the average depression scores of the participants. The effect size for the Pre and

Post PHQ-9 analysis (d = 0.28) displayed that motivational interviewing and goal setting had a

small effect depression scores (Cronk, 2012; Social Science Statistics). There is a significant

difference in the average scores of the Pre and Post-Depression scores after the use of

motivational interviewing and goal setting.

The results are presented in Table 2. A bar graph of the mean Pre and Post-Depression scores is

presented in Figure 1.

Table 2

Two-Tailed Paired Samples t-Test for the Difference Between Pre_PHQ9TS and Post_PHQ9TS

Pre_PHQ9TS		Post_PHQ9TS				
M	*SD*	*M*	*SD*	*t*	*p*	*d*
3.46	2.58	2.41	3.84	1.74	.091	0.28

Note. N = 39. Degrees of Freedom for the *t*-statistic = 38. *d* represents Cohen's *d.*
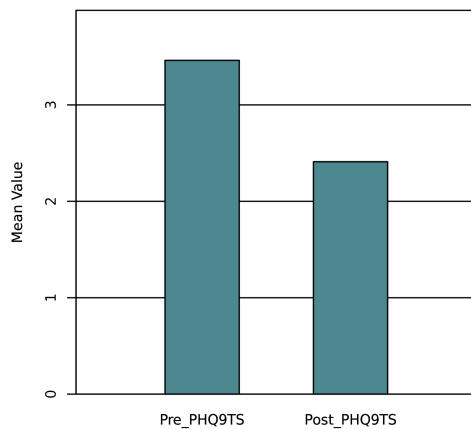
Figure 1. The average depression scores decreased after the intervention.

Quality of Life

A two-tailed paired samples *t*-test was conducted to examine whether the mean difference of Pre-Dartmouth Coop and Post-Dartmouth Coop was significantly different from zero. The result of the two-tailed paired samples *t*-test was significant based on an alpha value of 0.05, $t(37) = 6.26, p < .001$. This finding suggests the difference in the mean of Pre-Dartmouth Coop scores and the mean of Post-Dartmouth Coop scores was not significantly different from zero. Motivational Interviewing and goal setting did not significantly increase the average quality of life scores of the participants. The mean of Pre-quality of life scores was significantly higher than the mean of the Post-quality of life scores. The effect size for the impact of motivational interviewing and goal setting on the quality life of the sample was (d = 1.01) resulting in a large effect size for the quality of life scores (Cronk, 2012; Social Science Statistics). There is a significant difference between the mean Pre and Post quality of life scores after the use of motivational interviewing and goal setting.

The results are presented in Table 3. A bar graph of the means is presented in Figure 2.

Table 3

Two-Tailed Paired Samples t-Test for the Difference Between Pre_DartTS and Post_DartTS

Pre_DartTS		Post_DartTS				
M	*SD*	*M*	*SD*	*t*	*p*	*d*
21.24	4.58	17.00	5.14	6.26	< .001	1.01

Note. N = 38. Degrees of Freedom for the *t*-statistic = 37. *d* represents Cohen's *d*.
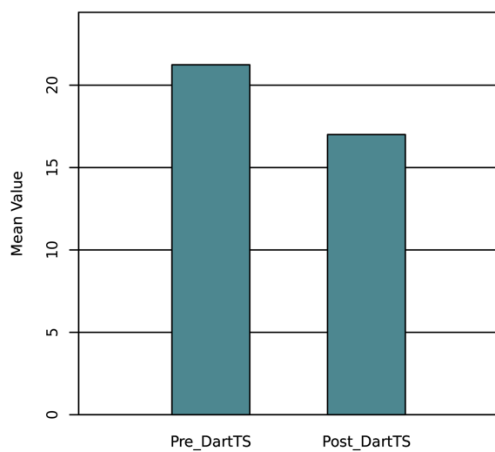

Figure 2. The mean quality of life scores decreased after the intervention.

Attendance Rates

Pearson's correlations were used to assess whether motivation interviewing, and goal setting had a positive correlation on attendance rates. There was no significant relationship between motivational interviewing and cardiac rehab attendance rates, (r(36) = 0.140, p > .403). The participants who completed cardiac rehab and filled out the PHQ-9 and Dartmouth Coop were 38 participants. This was a significant drop from the 84 participants that began the first part

of the EBP project. A barrier identifided is that the participants did not inform the staff about their last day of rehab not having enough time to fill out the questionaires. Another barrier is that the staff mail the participants the questionnaires and they are not returned back to the CR program. Though there is no significant relationship between motivational interviewing and increasing attendance rates the programs attendance rates increased from the previous year.

When assessing if using motivational interviewing and smart goals in cardiac rehab increased the attendance rates. The researcher compared the attendance rates of participants in the same cohort and compared the two years. Completion according to the American Association of Cardiovascular and Pulmonary Rehab (AACVPR) is 12 or more visits up to 36. In 2018 from January 1st to July 31st the attendance rate of participants to complete cardiac rehab was 78%. In 2019 from January 1st to July 31st the rare of participants to complete cardiac rehab was 86%. The attendance rate is calculated by dividing the attended sessions by the prescribed sessions (ie. 36) to get the individual attendance rate. The program's attendance rate is the average of all the participant's attendance rates (AACVPR, 2019). Motivational Interviewing and goal setting as an intervention displayed an increased the overall attendance of cardiac rehab participants.

Conclusions and Significance

Cardiac Rehab Programs are evidence based programs for decreasing cardiac related mortality rates (Sutaya et al., 2009). The SMART Hearts (Kungu, 2019) evidence based project sought to use motivational interviewing and goal setting as evidence based tools to increase participants attendance for CR, decrease depression scores, and increase quality of life scores. The evidence shows that by using motivational interviewing and goal setting there is a positive correlation for increasing Cardiac Rehab attendance (Kungu, 2019). The depression scores of the

participants after the intervention decreased meaning the participants reported less symptoms of

depression. The quality of life scores were not influenced by the intervention and post quality of

life scores did not increase, they decreased. Overall this EBP project further validated that

motivational interviewing and goal setting are evidence based tools for implementing behavior

changes. Recommendations for future practice are to implement motivational interviewing in CR

programs. Motivational interviewing can be implemented into the education classes held at

cardiac rehab. There are many barriers for those who have faced cardiac rehab and be

implementing motivational interviewing it may help participants gain ownership of their

diagnosis and encouragement to continue with this journey.

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