

SMART Hearts: Using Motivational Interviewing to Increase Cardiac Rehab Attendance

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Abstract

One in every three deaths in the United States results from cardiovascular disease (CDC, 2013). Cardiovascular Rehabilitation (CR) is a medically supervised program designed to help improve cardiovascular health for patients who have experienced heart attack, heart failure, angioplasty, or heart surgery (AHA, 2016). A hospital in the southwestern region of the United States of America reports their 2016 CR attendance rate of 79 %, which is much lower than the national average of 94% (AACVPR, 2016). Motivational interviewing (MI) is a proven method used to promote a positive behavior change for cardiac rehab patients. MI includes quality improvement activities such as peer support and cardiac rehab educational classes that have shown to increase health related quality of life measures and decreased depression symptoms (Pietrabessa et al., 2017; Pack et al., 2013). Despite all the knowledge about CR and its benefits for health nationally, there are low attendance rates, therefore the purpose of this evidence-based project is to improve CR attendance rates using MI. Patients enrolled into CR participated in the motivational interviewing for eight classes. At the end of the class, they were given notecards to create Specific Measureable Achievable Realistic and Timely (SMART) Goals for themselves for that week. The measurement tools, the PHQ-9 and Dartmouth COOP is a simple, reliable, and valid tool for assessing functional status of cardiac patients and the current CR program utilizes this tool and is familiar with explaining this tool (Eaton, Young, Fergusson, Garrett, & Kolbe, 2005). A Pearson correlation coefficient was calculated for the relationship between the MI classes and the CR attendance, depression scores, and quality of life. A strong positive correlation was found ($r(82) = .456, p < .001$) indicating a significant linear relationship between motivational interviewing and cardiac rehab attendance. A weak correlation that was not significant for depression symptoms and quality of life. The impact of this evidence-based

project is to give cardiac rehab programs further evidence that the implementation of motivational interviewing can positively influence cardiac rehab attendance rates.

Key words: cardiac rehab, motivational interventions, attendance rates, PHQ-9, Dartmouth Coop, SMART goals

SMART Hearts: Using Motivational Interviewing to Increase Cardiac Rehab Attendance

Cardiovascular disease (CVD) is one of the nations most complex and expensive medical diagnosis in the United States (US). Patients who have experienced a heart attack, heart failure, angioplasty, and heart surgery account for 555 billion dollars of American health care costs in 2016 (AHA, 2016). Cardiovascular disease is a serious health concern because one in three deaths have CVD as the underlying cause of death. Yearly 801,000 people in the US die from CVD (AHA, 2017). According to the American Heart Association (AHA) coronary heart disease accounts for 45.1 percent of the deaths in the US, followed by stroke at 16.5 percent, heart failure at 8.5 percent, and high blood pressure at 9.1 percent (AHA, 2017). There are extensive research efforts to prevent CVD and extensive research for the management of CVD. One-way health providers are improving the quality of life for those who have cardiovascular disease are through cardiovascular rehabilitation (CR). CR is a medically supervised program designed to help improve cardiovascular health for patients who have experienced heart attack, heart failure, angioplasty, or heart surgery (AHA, 2016). The focus of CR is exercise training, education on heart healthy living, and counseling and support for cardiac patients.

Problem Statement

Research shows that CR programs help reduce mortality rates and improve quality of life for CVD patients. In a landmark study, Sutaya et al. (2009) studied 601,099 Medicare patients hospitalized for acute coronary syndromes, stable ischemic heart disease, or revascularization procedures. The research results displayed a reduction in mortality rates among patients attending a CR program versus those who did not attend. Anderson et al. (2016) performed a systematic review of 63 research studies, which demonstrated a reduction in mortality rates, hospital readmission rates, and improvements in health-related quality of life (HDQL). Despite

the known benefits for attending CR, programs there are still barriers to participation and adherence. The identified problem is CR attendance rates at a hospital in the southwestern US are below the national average of 94% (AACVPR, 2016). The gap is that there are barriers affecting the attendance rates at this hospital causing low attendance rates. The US Government recognizes that CVD is one of the top leading health concerns. Healthy People 2020 are a set of healthcare goals and benchmarks in which the US aims to reach every ten years (Healthy People 2020, 2017). The Healthy People 2020 goal is, “Improve cardiovascular health and quality of life through prevention, detection, and treatment of risk factors for heart attack and stroke; early identification and treatment of heart attacks and strokes; prevention of repeat cardiovascular events; and reduction in deaths from cardiovascular disease” (Healthy People 2020, 2017).

Purpose and Rationale

Improvement in CR attendance rates is an important topic because research illustrates the positive benefits for patients who complete CR programs (Anderson et al., 2016 & Suaya et al., 2009). Evidence shows positive outcomes such as stronger medication adherence and improved HDQL for patients who attend CR programs. Therefore, it is important to improve the CR program attendance in order to help improve the health and lives of cardiac patients. The purpose of this paper is to illustrate the importance of CR, to review the current literature regarding motivational programs to increase attendance rates, and report the evidence based research that took place at a cardiac rehab in a hospital in southwest Arizona. The pertinent questions will be used to evaluate the outcomes of this project are: 1.) Does motivational interviewing have an impact on depression symptoms, quality of life, and cardiac rehab attendance rates? 2.) Is the cardiac diagnosis or age related to depression symptoms, quality of life, and cardiac rehab

attendance? The project title is Specific, Measureable, Achievable, Realistic, and Timely (SMART) Hearts: Using Motivational Interviewing to Increase Cardiac Rehab Attendance.

Background and Significance

Population

The population in this southwestern city in Arizona is predominately elderly adults sixty-five and older. The population is 496,000 people and the average annual income is 48,000 dollars. The most predominant race is non Hispanic White people (Data USA, 2018).

Interventions to Improve CR Attendance

The following literature reviewed consisted of motivation programs, behavioral therapy, and quality improvement research studies and their results for improved CR involvement and attendance. Pack et al. (2013) used policy change, a video, or a motivation program to track progress and attendance in CR patients and found that overall, quality improvement increased CR attendance rates versus the control group. Pietrabissa, Manzoni, Rossi , & Castelnovo (2017) tested the efficacy of Brief Strategic Therapy (BST) combined with Motivational Interviewing (MI) in improving selected biomedical and psychological outcomes for patients in a residential CR program. However, in the study the results showed no significant differences between the BST and the BST with MI groups on the outcome variables such as reduced systolic blood pressure. Another study by Borg et al. (2017) examined a group of patients receiving usual care versus a group receiving a behavioral medicine intervention in physiotherapy for four months at CR; the results of this study are pending the completion in 2018.

San Juan et al. (2016) research uses a motivation intervention group that participated in a Program to Improve Well Being (PIW) to improve CR patient's emotional state. The results demonstrated that those who had PIW had increased positive emotions and increased CR program completion. In a study performed in Denmark Lynggaard et al. (2017) attempted to assess the impact of the patient education 'Learning and Coping Strategies' (LC) on patient adherence to an eight-week CR program. The results demonstrated that the subjects in the LC arm adhered to at least 75% of the exercise training sessions than the subjects in the control group. The common themes among the research studies are the interventions for improving CR attendance are addressing psychological wellbeing of cardiac patients and counseling to help improve their emotional stability.

Quality improvement strategies such as on-site attendance at prescheduled visits were researched by Alter et al. (2015). Researchers found that cardiac patients who had on-site prescheduled visits had decreased risks of death or cardiac hospitalizations. Dankner et al. (2015) also researched a quality improvement program among medical center staff. The patients in the intervention arm received written and oral explanations on CR benefits and eligibility, and a follow-up telephone call two weeks after hospital discharge. The results displayed that the participation rate in CR was 16.5% for the control arm and 31.0% for the intervention arm. These results suggest that the interventions improved CR attendance by almost double the control arm. Ali-Faisal et al. (2016) conducted a 2-parallel, randomized, single blind pilot trial with allocation concealment of CR patients who were divided into a Peer Navigation group or usual care group. The results demonstrated the value and significance of peer support. The common themes in the quality improvement strategies are open communication and education about the benefits of CR and medical staff involvement in the patient throughout the entire

process of CR post discharge. It seems that the patients who received post discharge explanation and encouragement were more likely to attend CR (Ali-Faisal et al., 2016; Dankner et al., 2015).

Outcomes Associated with Cardiac Rehab Attendance

Following a recent literature review on CR programs, the most recent data regarding CR programs displays various outcomes for those whom attended CR programs versus those who did not. Martin et al. (2012) researched patients post angiography with a referral to CR programs and found that CR completion was associated with a decreased risk of all-cause hospitalization and cardiac hospitalization but not with emergency room visits. In a similar study by Soo Hoo, Gallagher, & Elliott, (2016) the researchers analyzed over 200 patients at two hospitals who were interviewed by telephone at four weeks and six months post discharge, using open-ended questions to assess CR attendance, socioeconomic status, modifiable risk factors, clinical outcomes, and post-discharge health support. The results were post-discharge home visits at four weeks and at six months were associated with better CR attendance.

Rouleau et al. (2018) studied patients' decision-making about whether or not to enroll in CR. Face to face interviews of patients referred to CR programs yielded three themes: anticipated benefit, perceived ability, and contextual influences. Those patients whom were explained the benefits of the CR program and experienced contextual influences on decision-making by a health care provider recommendation were more likely to enroll in CR programs. Another similar study by Fletcher & McBurney (2016) resulted in three major themes that reflected the participant decision-making experience: invitation and information about participation in CR; person-centered approach to CR provision; and ongoing support needs.

The common themes among these studies are the individual's motivation and how this influences their decision making process and impacts their ability to enroll and complete CR.

Factors that deterred participation were distance to CR, family support for attendance to CR, and provider education about the benefits of CR (Fletcher & McBurney, 2016; Rouleau et al., 2018; Soo, Gallagher, & Elliot, 2016).

Internal Evidence

At a hospital in southwestern US the 2016 CR attendance rate is 79 % compared to the national average of 94% (AACVPR, 2016). The CR staff indicates various barriers such as the referral process, distance, cost, and medical co-morbidities that influence cardiac patients attendance to CR. Inpatient RN's at this hospital also state they do not emphasize the importance of CR attendance to improving their HRQL but rather they emphasize medications and follow up appointments. In conjunction with the literature review and internal evidence regarding CR programs and attendance rates the relevant PICOT question is, “ In CVD patients (heart attack, heart failure, angioplasty, heart surgery) how do motivational interventions compared to no motivational interventions affect CR attendance rates over eight weeks?”

Search Strategy

In order to answer the formed PICOT question the databases searched for the literature review included PubMed, Cumulative Index of Nursing and Allied Health Literature (CINAHL), The Cochrane Library, and PsycInfo. Key words included *attendance rates, cardiac, cardiac rehabilitation, cardiovascular disease, completion, heart, motivational program, outcomes, and quality improvement*. Keywords were searched by using “AND”, MeSH terms, and Boolean /phrase search mode to yield more specific results. The initial search of *cardiovascular rehabilitation* and *outcomes* in PubMed yielded 3573 results. (Appendix A) The initial search of *cardiovascular rehabilitation* and *completion* in CINAHL yielded 114 results (Appendix B). The initial search of *cardiovascular rehabilitation* and *attendance rates* in The Cochrane Library

yielded 13 results (Appendix C). The initial search of *cardiovascular rehabilitation* and *motivational program* in PsycInfo yielded 54 results (Appendix D).

After setting limits to English language, humans, age 18 and older, and publication date from 2013-2019 final results as follows; PubMed yielded 30 final results (Appendix A), CINAHL yielded 32 final results (Appendix B), Cochrane Library yield 13 final results (Appendix C), and PsycInfo yielded 15 results (Appendix E). Additional review of the National Guideline Clearing House (NGCH) to review guidelines and research articles pertinent to CR yielded 33 results (Appendix F). The main purpose of searching through the NGCH was to gain further knowledge on the current CR guidelines, evidence based practice regarding CR, and current articles topics. The current CR guideline published by the AACVPR (2013) covers the entire scope of practice for cardiac rehabilitation and secondary prevention programs with focus on promoting positive life style and behavior patterns. Grey literature was researched but did not yield any further evidence. Ancestral searching helped gather the common foundational studies such as Suya et al. (2007) research with Medicare patients.

The inclusion criteria consisted of peer reviewed research studies or systematic reviews published after 2013 with relevance to cardiac rehabilitation, motivational program, quality improvement activities, and attendance rates. Exclusion criteria included non-peer reviewed articles, published before 2013, and studies involving children or adolescents. Roughly 40 research articles were critically examined according to the level of evidence and clinical relevancy for CR. Ten articles were chosen for the specific criteria of addressing areas of the PICOT question, being clinically credible, and showing valid results. For examination of the literature there are two systematic review studies, five randomized controlled studies, one controlled cohort study, one descriptive cohort study, and one qualitative study. These research

articles assessed motivation programs or quality improvement activities and their effect on CR attendance rates. Additionally, some research studies also assessed for improved HRQL and improved emotional states. Each study was independently reviewed and the data was extracted and organized alphabetically in evaluation tables for concise examination and comparison (Appendix G).

Critical Appraisal and Synthesis

Critical appraisal and synthesis of the literature produced one quantitative systematic review with level one evidence, one qualitative systematic review with level five evidence, five randomized controlled studies with level two evidence, two controlled cohort studies with level three evidence, and one qualitative study with level six evidence. The research studies were all conducted in CR inpatient and outpatient settings and the locations were global (Appendix G). Demographics among the studies were homogenous due to strict diagnostic criteria of cardiac diagnoses that allow for participation in CR. The average age of the participants is 63 years old (Appendix H). Across all the studies, there was underrepresentation in female participants thereby weakening generalizability. Only one study detected selection bias because of not randomizing their male and female participants (Appendix G). The variables of interest among the studies were CR adherence and identification of barriers for CR adherence. The studies tested a variety of strategies to increase CR uptake. Two of the studies analyzed the barriers and motivators for attending and adhering to CR (Appendix G). Three of the studies utilized peer or health worker visits before discharge and structured phone calls with mailed reminders to attend CR post discharge. Six of the studies used educational programs and motivational interviewing focused on learned coping strategies, stress management, and strategic therapy to assess for

influence in CR adherence. One study reviewed other current interventions for CR adherence (Appendix G).

The measurement tools used to measure outcomes were variable due to country location. The tools same key concepts of depression, anxiety, health related quality of life, and readiness for change (Appendix G). The short form health related quality of life survey (SF-36 HRQL) measures the health related quality of life of the patient with the reliability coefficient of .70-.92 and a validity coefficient of 0.75 (Bunevicius, 2017). The readiness-to-change ruler assesses a person's motivation to change a specific health related behavior the reliability coefficient of (0.864 to 0.899) and validity coefficient of 0.935 (Anthony, 2004). The Beck Depression Scale measures depression symptoms the reliability coefficient is .91 and the validity coefficient is .92 (Beck, 2018).

Data analysis in a majority of the studies used Chi Square to compare observed data with the data expected from the various hypotheses. Other statistical analysis used Pearson Correlation, ANOVA, and Man Whitney t test. The majority of the studies were high ranking evidence therefore the statistical analysis is valid and reliable. Positive secondary outcomes such as lower SBP, longer 12 minute walking tests, and decreased depressive symptoms were reported (Appendix G).

Evidence Based Research Conclusions

The conclusions drawn from the research studies support interventions which involve, education about CR and its benefits, continued support through the use of telephone calls, and learning coping strategies for stress management and depression were the most effective tools for improving CR attendance. The evidence shows that interventions for increasing positive emotions, stress management, and coping strategies increase CR adherence (Appendix H).

However, interventions involving peer support do not influence CR attendance. Instead CR attendance is influenced by follow up and ongoing support by the CR staff and their providers. All the research concludes that depression, anxiety, cost, and distance to CR are the highest predictors for CR non-attendance (Appendix H). Based on the evidence presented a strategy may be identifying depression in CR patients early and offering those patients added support and guidance during the program. Another strategy may be creating a time during the CR sessions to review stress management in a group setting.

The Iowa Model

The Iowa Model has been widely recognized for the ability to implement evidence-based practice (EBP) and for its applicability with multidisciplinary healthcare teams (Melnyk & Fineout-Overholt, 2015). The Iowa Model has seven steps for translating evidence into practice. The first step is identification of triggers; currently the triggers are the barriers to CR attendance such as cost, comorbidities, patient motivation and transportation. Together these barriers are affecting the CR attendance rates at a hospital in Southwest Arizona's CR. The second step involves identifying clinically relevant nursing questions. Questions that arise are: What is causing the patients at this CR to have a lower attendance rate than the national average? What is this CR doing differently? What can this CR do better for retention? Next is addressing the organization's priorities, based off the testimonies of employees they want to remain as recognized CR through their recognition in the American Association of Cardiovascular and Pulmonary Rehabilitation (AACVPR). This distinction is a priority to the organization and thus the organization is willing to seek solutions for the identified problem. The fourth step is forming a team and the Iowa model was chosen for its ability to be used in a multidisciplinary team. The implementation of the intervention at CR encompasses a team, which consists of a Cardiologist,

Registered Nurses, and Exercise Physiologists. The next phase is piloting a change; the proposed change is a quality improvement project in which the CR patients track their progress during CR by establishing Specific, Measurable, Achievable, Realistic, and Timely (SMART) goals in a journal. Using a journal, the CR patients are asked weekly motivational questions to boost self-efficacy. This also gives the CR staff an opportunity to assess their goals and assist them in follow up regarding their goals. The patient's autonomy and self-efficacy in achieving their goals is boosted when the CR staff monitor and encourage them during the CR visits. The last step is evaluating the practice change and dissemination of results. The evaluation of the practice change is a retrospective comparison of 3-month attendance rates of patients (Melnyk & Fineout-Overholt, 2015).

The Health Promotion Model

The theoretical model chosen to guide the potential project on improving CR attendance rates is the Health Promotion Model designed by Nola J. Pender (1982). This model focuses on three areas; first, individual characteristics and experiences, second, behavior-specific cognitions, and third, the affect and behavioral outcomes (Butts and Rich, 2015). The theory states that that each person has unique personal characteristics and experiences that affect subsequent actions. Each CR patient comes to this rehab having their own previous life diagnosis and other factors affecting actions and beliefs for attending CR. The Health Promotional Model is comprised of four assumptions: individuals seek to regulate their own behavior, individuals are bio-psycho-socially complex interacting with the environment, health professionals can exert influence on people throughout the life span, and self-initiated reconfiguration is essential for changing behavior (Butts and Rich, 2015). The health belief model has thirteen theoretical propositions focused around an individual's personal recognition for change promoting positive

self-efficacy. The health belief model can be utilized with CR patients by helping them realize their own personal strengths may affect their health behaviors. This model can also help the CR staff in finding ways to promote self-efficacy. This model was chosen for its application in MI and the results desired from using motivational interviewing techniques. MI is a counseling method that helps people resolve ambivalent feelings and insecurities to find the internal motivation they need to change their behavior (Rollnick, Miller, & Butler, 2008). The health promotion model promotes self-empowerment for improved health outcomes.

Project Methods

Design

This SMART Hearts project is a cross-sectional design study. The design looks at two sample populations over a period of time where one group received an intervention and another group did not. The evaluation is by chart audit and analysis is using the Pearson Correlation Coefficient.

Arizona State University (ASU) Institutional Review Board (IRB)

The Social Behavioral form was filled out and sent to the ASU IRB team and went through the committee to receive approval two separate times. The final approval for the EBP is April 9, 2019 (Appendix L).

Sample

Cardiac Rehab (CR) is a medically supervised program designed to help improve cardiovascular health for adult patients 18 years and older who have experienced heart attack, heart failure, angioplasty, or heart surgery (AHA, 2016). The sample is Phase II patients: Phase II Cardiac Rehab is after discharge from hospital in an outpatient setting, up to 36 visits generally 2-3 visits per week for 1 hour in length with cardiac monitoring. The inclusion criteria

are a CR fitting diagnosis: heart attack, heart failure, angioplasty, and heart surgery. Other inclusion criteria is being an adult 8 years and older and being able to physically participate.

Setting

The setting is a large metropolitan hospital in the southwestern area of Arizona. This CR program is accredited from the AACVPR and is on a Top fifty hospital in Arizona.

Recruitment Methods

The participants were recruited during their initial assessment and enrollment for to Cardiac Rehab. The newly enrolled patients completed a Cardiac Rehab consent form per the current facilities consent process. New participants received a participation letter at the beginning of the education classes. Existing patients received a CR participation letter 1-2 weeks before the study start date.

Project Procedures

When a patient was referred to Cardiac rehab by their Cardiologist or Primary Care Provider and after standard procedure the admission was conducted. Patients were asked to come in for a one on one (exercise physiologist) session to complete all admission paper work, learn about the program, and tour of the gym. Patients also received instructions on how CR sessions would be carried out. Admission Forms include: CR Individualized Treatment Plan, Outpatient CR Assessment Data Sheet, Patient Information Worksheet, Summary of Patient Medications, Dart Mouth Coop, PHQ-9, Nutrition Assessment, and Consent to participate in CR (Appendix L) After completing this process the patients will be given a participation letter during their enrollment to CR and again prior to each education class to make sure all patients are aware of the study and consent to participating.

Intervention

Patients enrolled into CR from (set time date of project start 3 weeks prior) will participate in the motivational interviewing session 15 minutes of the end of the class. At the end of the class they will be given notecards to create Specific Measureable Achievable Realistic and Timely (SMART) Goals for themselves for that week. The creation of the SMART Goal is during the MI session. The time involved for this education class is 30 minutes after their CR session.

Data Collection

The data was collected before and after the intervention to examine depression symptoms, quality of life, and cardiac rehab attendance rates from those individuals receiving cardiac rehabilitation. The outcome variables were depression symptoms, quality of life, and cardiac rehab attendance. The questionnaires/surveys used for this EBP project will be the Patient Health Questionnaire (PHQ-9) Depression Questionnaire and the Dart Mouth COOP Health Related Quality of Life Questionnaire (Appendix L). The primary investigator will use the chart audit form to conduct a chart audit/review. The chart audit form is in the evidence-based documents. This is how the data was collected in order keep the data organized.

This program has CR patients record weekly Specific, Measureable, Achievable, Realistic, and Timely (SMART) goals on a notecard. Using a notecard, the CR patients were asked weekly motivational interviewing questions to boost self-efficacy and staff works with the patients to assist them in those goals. Each week the CR staff and the investigator asked them to summarize their progress on their goals and if they needed any assistance in their goals. The intended outcome is increased CR attendance rates. Evaluation of the intervention was evaluated from the pre and post survey questions from the Dartmouth COOP and Patient Health Questionnaire (PHQ-9). The evaluation questions for this proposed intervention is: In CR

patients, does a motivational interviewing (SMART Hearts Program) improve CR attendance rates in eight weeks? Does motivational interviewing have an impact on cardiac depression, quality of life, and cardiac rehab attendance? Does the cardiac diagnosis or age related to depression, and quality of life, cardiac rehab attendance?

Measures/Instruments

The instruments used are the Dartmouth Coop and Patient Health Questionnaire -9 (PHQ-9). The PHQ-9 is depression screening questionnaire which scores from the DSM- IV criteria for diagnosis of Major Depression Disorder (Kronenke, 2001). The diagnostic validity of the 9-item PHQ-9 was established in studies involving eight primary care and seven obstetrical clinics. PHQ-9 scores > 10 had a sensitivity of 88% and a specificity of 88% for Major Depressive Disorder. Internal consistency of the PHQ-9 is high in study involving two different patient populations produced Cronbach alphas of .86 and .89. Validity was established by conducting 580 structured interviews by a mental health professional the results from these interviews showed that individuals who scored high (≥ 10) on the PHQ-9 more likely to be diagnosed with depression by the mental health professional (Kroenke et al., 2001). The PHQ-9 is free and simple for patients to complete. It is currently used a pre and post assessment at this CR program. The desired outcome is a reduction in depressive systems after the implementation of the SMART Hearts Program.

The Dartmouth Cooperative Functional Assessment Charts (COOP) is a questionnaire that assesses general functional status of person. The Dartmouth COOP Questionnaire was created by researches at a university (Nelson et al., 1987). The Dartmouth Coop Questionnaire is a valid and reliable tool for assessing patient's functional status in order to tailor medical treatments. The tool consists of nine questions measuring nine domains of health status: physical

fitness, feelings, daily activities, social activities, change in health status, current overall health perceptions, social support, quality of life, and bodily pain (Eaton, Young, Fergusson, Garrett, & Kolbe, 2005). This survey assesses the quality of life perceived by correspondents and is a useful tool for monitoring patients with chronic disease and recording their baseline functional status. The reliability and validity of the Dartmouth COOP the results displayed reliability with statistically significant in each domain apart from the change in health domain. The Dartmouth COOP's validity coefficient of 0.4 - 0.8 with $p = < 0.05$ is and it is statistically significant in comparison to the Short Form 36 HRQL Survey (Eaton, Young, Fergusson, Garrett, & Kolbe, 2005). The Dartmouth COOP is a simple, reliable, and valid tool for assessing functional status of cardiac patients and the current CR program utilizes this tool and is familiar with explaining this tool. This desired outcome for this tool is to assess if the SMART Hearts program increased the patients HRQL and their overall perceptions of self-efficacy.

Outcomes and Results

Descriptive Statistics

The sample of older adults (n=84) participating in outpatient cardiac rehab was a good sample size for this evidenced based project. The average age of the sample is 70 (SD= 9.41) and the age's range from 44 to 87 years of age (Appendix K). The gender consisted of 66 (73%) males and 22 (27%) females. The ethnicity of the participants is 82 (98%) White, and 2 (2%) Hispanic. The most prevalent education level in the sample was Some College 30 (35.7%). The most prevalent cardiac diagnosis was Coronary Artery Bypass Graft Surgery (CABG) patients (31) (36.9%) (Appendix K).

Data Analysis

The data was analyzed using the SPSS™ version 25 statistics software. The test chosen to analyze the data was The Pearson Correlation Coefficient test was used to examine the strength of the linear relationship between two variables (Cronk, 2014). The focus of the analysis for the variables is to answer these questions: Does motivational interviewing have an impact on cardiac depression, quality of life, and cardiac rehab attendance? Is the cardiac diagnosis or age related to depression, and quality of life, cardiac rehab attendance? The descriptive statistics for the outcome variables are the most prevalent depression score was 2 (14.6%); no depression, and the most prevalent quality of life score 26/45 (11.1%); moderate symptoms of reduce quality of life. A Pearson correlation coefficient was calculated for the relationship between the MI classes and the CR attendance, depression scores, and quality of life. A strong positive correlation was found ($r(82) = .456, p < .001$) indicating a significant linear relationship between MI and CR attendance. A weak correlation of no significance ($r(82) = -.002, p = .985$) MI was not related to depression scores. A weak correlation of no significance ($r(82) = -.048, p = .670$) MI was not related to quality of life scores (Appendix K, Table 1).

Impact and Future Discussion

The impact of this evidence-based project will likely give CR programs further evidence that the implementation of motivational interviewing can positively influence cardiac rehab attendance rates. Motivational Interviewing is an evidenced based approach for helping people make positive behavior changes. Cardiovascular disease is very complicated and the healing process is challenging for the patients and their families. It is important for cardiac rehab staff to implement motivational interviewing to give patients the support they require to continue exercising in rehab. Making small changes to cardiac rehab programs may give programs further reimbursement from insurances and help healthcare systems with their overall missions.

Future implications regarding this project are to continue with phase two of the data collection. Part I is concluded and analysis was completed using the Pearson correlation coefficient assessing the relationships between the variables of motivational interviewing and its impact on cardiac rehab attendance, depression scores, and quality of life scores. Part II will be after all the participants have completed cardiac rehab, which is 36 sessions or more. The data will be analyzed using the same project procedure and methods looking for answers to the question: Is there a significant difference between the depression score and the quality of life scores before and after the intervention of motivational interviewing? Statistical test analysis will be the Paired T test and Cohen D test to compare the difference between two mean scores from the pre and post PHQ-9 and Dartmouth Coop.

Conclusion

The literature indicated that participation in CR can result in positive behavior change for patients and their overall cardiac health. The cardiac rehab staff works tirelessly to ensure the patients are safely exercising and learning that life after a traumatic cardiac event can be fulfilling. The hope is that cardiac patients continue to exercise and utilize the health principles taught within CR programs. The SMART Hearts project further validated motivational interviewing and its multiple uses. The implementation of MI followed by goal creation will likely continue as a new process in this CR program. The heart is the rhythm of our lives and we all have the power to live heart healthy lives.

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Appendix A

PubMed Database

History [Download history](#) [Clear history](#)

Search	Add to builder	Query	Items found	Time
#6	Add	Search (cardiac rehab) AND attendance rates Filters: published in the last 5 years; Humans	30	20:32:01
#5	Add	Search (cardiac rehab) AND attendance rates Filters: Humans	77	20:31:55
#3	Add	Search (cardiac rehab) AND attendance rates	87	20:31:23
#4	Add	Search (cardiac rehab) AND outcomes	3573	20:18:25
#2	Add	Search (cardiovascular rehabilitation) AND attendance rates	79	20:17:36

You are here: [NCBI](#) > [Literature](#) > [PubMed](#) [Support Center](#)

GETTING STARTED

- NCBI Education
- NCBI Help Manual
- NCBI Handbook
- Training & Tutorials
- Submit Data

RESOURCES

- Chemicals & Bioassays
- Data & Software
- DNA & RNA
- Domains & Structures
- Genes & Expression
- Genetics & Medicine
- Genomes & Maps
- Homology
- Literature
- Proteins
- Sequence Analysis

POPULAR

- PubMed
- Bookshelf
- PubMed Central
- PubMed Health
- BLAST
- Nucleotide
- Genome
- SNP
- Gene
- Protein
- PubChem

FEATURED

- Genetic Testing Registry
- PubMed Health
- GenBank
- Reference Sequences
- Gene Expression Omnibus
- Map Viewer
- Human Genome
- Mouse Genome
- Influenza Virus
- Primer-BLAST
- Sequence Read Archive

NCBI INFORMATION

- About NCBI
- Research at NCBI
- NCBI News & Blog
- NCBI FTP Site
- NCBI on Facebook
- NCBI on Twitter
- NCBI on YouTube

Appendix B

CINAHL Database

The screenshot shows a Chrome browser window with multiple tabs. The active tab is displaying the search history and results for a search in the CINAHL database. The search terms are 'cardiac rehab'.

Search History/Alerts

Print Search History | Retrieve Searches | Retrieve Alerts | Save Searches / Alerts

Select / deselect all | Search with AND | Search with OR | Delete Searches | Refresh Search Results

Search ID#	Search Terms	Search Options	Actions
S4	cardiac rehab	Limiters - Published Date: 20130101-20181231 Search modes - Boolean/Phrase	View Results (32) View Details Edit
S3	cardiac rehab	Search modes - Boolean/Phrase	View Results (114) View Details Edit
S2	cardiac rehab AND attendance rates	Search modes - Boolean/Phrase	View Results (0) View Details Edit
S1	cardiac rehab AND outcomes	Search modes - Boolean/Phrase	View Results (12) View Details Edit

Refine Results | Search Results: 1 - 32 of 32 | Relevance | Page Options | Share | Plum Print

Current Search

Boolean/Phrase:
cardiac rehab

Limiters
Published Date:
20130101-20181231

1. **Social inequality and barriers to cardiac rehabilitation in the rehab-North register.**

(includes abstract) Eichhorst, Regina; Ravn, Lisbeth; Riis Christiansen, Susanne Svane; Graversen, Christina Boesgaard; Larsen, Mogens Lytken; Johansen, Martin Berg; Christiansen, Susanne Svane Riis; Scandinavian Cardiovascular Journal, Dec2017; 51(6): 316-322. (7p) (journal article) ISSN: 1401-7431 PMID: 29019280 AN: 126214795

Abstract: **Aim:** Barriers to participation in cardiac rehabilitation (CR) may occur at three levels of the referral process (lack of information, declining to participate, and referral to appropriate CR programme). The aim is to analyse the impact of socioeconomic status on barriers to CR and investigate whether such barriers influenced the choice of referral. **Methods:** The

Taskbar: DMP student, DNP 700 paper 2, Wk10gu_Cardiac, Search S...les.docx, SAMPLE_MS.docx, Rehab Paper2

Appendix C

The Cochrane Library Database

Wiley Online Library



Trusted evidence.
Informed decisions.
Better health.

Log in / Register

Search Search Manager Medical Terms (MeSH) Browse

[Search Limits](#)
[Search Help](#)
 (Word variations have been searched)
 [Add to Search Manager](#)

All Results (473)

- Cochrane Reviews (13)
 - All
 - Review
 - Protocol
- Other Reviews (2)
- Trials (456)
- Methods Studies (1)
- Technology Assessments (0)
- Economic Evaluations (1)
- Cochrane Groups (0)

- All
- Current Issue

- Me Methodology
- Dx Diagnostic

Cochrane Database of Systematic Reviews : Issue 1 of 12, January 2018

Issue *updated daily* throughout month

There are 13 results from 10067 records for your search on 'cardiovascular rehabilitation and outcomes in Title, Abstract, Keywords in Cochrane Reviews'

Sort by

Select all | Export all | Export selected

Home-based versus centre-based cardiac **rehabilitation**
Lindsey Anderson , Georgina A Sharp , Rebecca J Norton , Hasnain Dalal , Sarah G Dean , Kate Jolly , Aynsley Cowie , Anna Zawada and Rod S Taylor
Online Publication Date: June 2017

Exercise-based cardiac **rehabilitation** for coronary heart disease
Lindsey Anderson , David R Thompson , Neil Oldridge , Ann-Dorthe Zwisler , Karen Rees , Nicole Martin and Rod S Taylor
Online Publication Date: January 2016

Appendix D

PsycInfo Database

Initial Search Strategy

Chrome File Edit View History Bookmarks People Window Help

My ASU Calming Seas #1 - 11 H My ASU Library One Search A-Z Databases: P Search Results - PsycINFO Wairimu

Secure | https://search-proquest-com.ezproxy1.lib.asu.edu/psycinfo/results/42B94FE2AD1546CAPQ/1?accountid=4485

Apps Google Gmail Yahoo Cox My ASU Facebook Typhon Group: NPS... My Alliance Advanta... Home & Business Int... APA citation generat... RefWorks Login Other Bookmarks

PsycINFO

Basic Search Advanced Search About

AMERICAN PSYCHOLOGICAL ASSOCIATION

(cardiac rehabilitation) AND (motivation program)

Peer reviewed 54 results Search within

Modify search Recent searches Save search/alert

Cite Email Print Save

Relevance Sort

Narrow results

Full text

Peer reviewed

Source type

Scholarly Journals (43)

Dissertations & Theses (9)

Books (2)

More options...

Publication date

Select 1-20 0 Selected items

Brief view Detailed view

1 Assessing acute coronary syndrome patients' cardiac-related beliefs, motivation and mood over time to predict non-attendance at cardiac rehabilitation

Herber, Oliver R.; Jones, Martyn C.; Smith, Karen; Johnston, Derek W.. Journal of Advanced Nursing Vol. 68, Iss. 12, (Dec 2012): 2778-2788.

...over time to predict non-attendance at a cardiac rehabilitation programme by...
...the cardiac rehabilitation programme. This will identify changes and...
...knowledge/misconceptions, mood and non-attendance of the cardiac rehabilitation...

Cited by (3) References (52)

Abstract/Details Get It! @ ASU Preview

2 Self-determination theory and self-efficacy theory: Can they work together to predict physical activity in cardiac rehabilitation?

Sweet, Shane N.. ProQuest Information & Learning, 2014. AAINR98228.

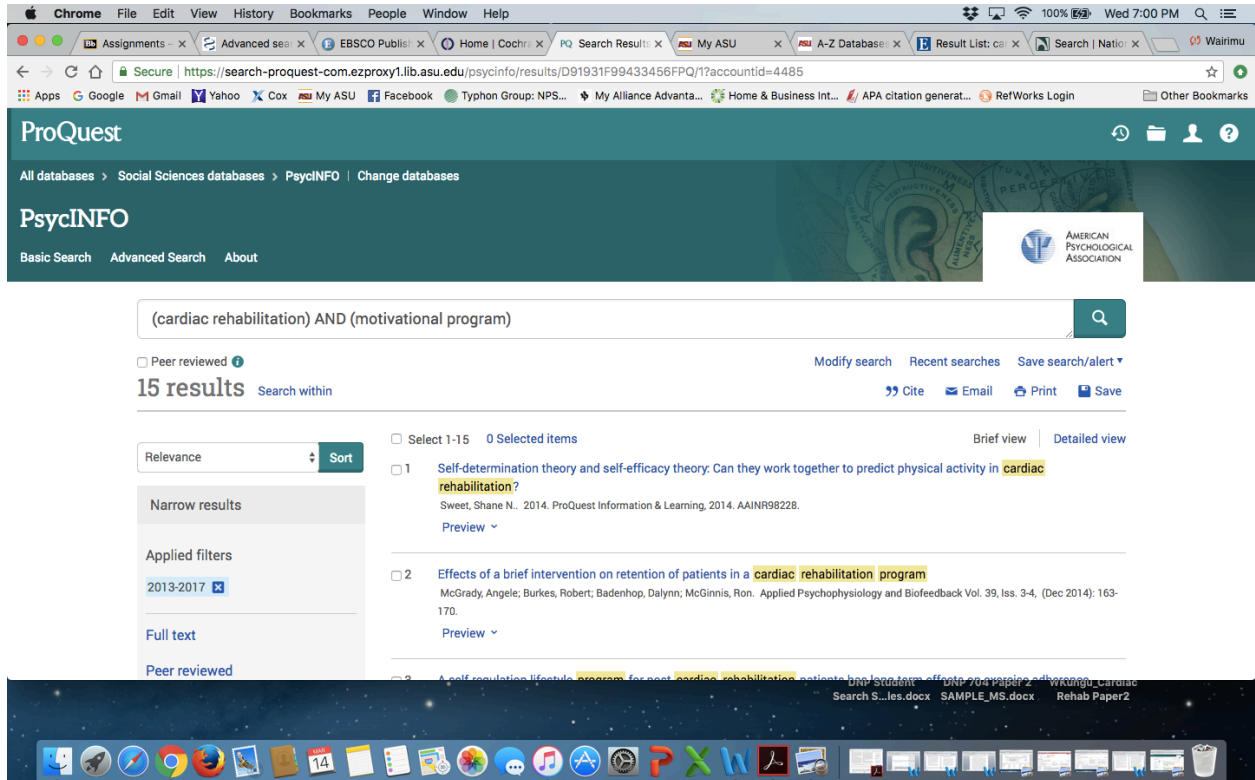
...activity based cardiac rehabilitation programs have been shown to reduce...
...data of patients following a cardiac rehabilitation program. Although no...
...pathway to build motivation is ideal to inform future interventions and cardiac...

Cited by (1) References (212)

Appendix E

PsycInfo Database

Final Search Strategy



Appendix F

National Guideline Clearing House

The screenshot shows a web browser window displaying the National Guideline Clearing House search results. The browser's address bar shows the URL: https://www.guideline.gov/search?q=cardiovascular+rehabilitation&f.Meets_Revised_Inclusion_Criteria=Yes&page=1. The page header includes the AHRQ logo and the text "Agency for Healthcare Research and Quality Advancing Excellence in Health Care". Below the header is a search bar with the text "Search" and a "SEARCH TIPS" link. A navigation menu at the bottom of the header includes links for HOME, NEW THIS WEEK, GUIDELINE SUMMARIES, GUIDELINE SYNTHESSES, EXPERT COMMENTARIES, MATRIX TOOL, SUBMIT GUIDELINES, and HELP & ABOUT. The main content area shows "1-20 of 33 results for 'cardiovascular rehabilitation'". On the left, there is a "NARROW RESULTS" sidebar with filters: "Meets 2013 Inclusion Criteria (33)" (checked), "Includes NEATS Assessment (1)", "U.S.-based Organizations (19)", and "Addresses Multiple Chronic Conditions (4)". Below the filters is a "Publication Date" section. The main results area shows "1 2" with a "Next >" button. Below this, there is a "SORT BY" section with options for "Relevance" and "Date", and a "SHOW" section with options for "20", "50", and "100". A "Compare Summaries" button is also present. The first result is a "GUIDELINE SUMMARY" for "NGC:011163" dated "2016 NOV-DEC". The title of the guideline is partially visible: "Cardiovascular Rehabilitation: A Clinical Practice Guideline for Health-Care Providers". The browser's taskbar at the bottom shows various application icons, including Chrome, Firefox, and several document windows.