

Effects of Telephone Intervention on Arthritis Self-Efficacy, Depression, Pain, and Fatigue in Older Adults with Arthritis

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ABSTRACT

Purpose: Arthritis self-efficacy (ASE) characterizes individuals' confidence in managing their arthritis. This study's purpose was to examine the effects of a telephone intervention on ASE, depression, pain, and fatigue in older adults with arthritis. **Methods:** Eighty-five elders with arthritis were randomly assigned to the intervention or control group. Participants in both groups: (a) completed baseline assessments of ASE, depression, pain, and fatigue; (b) received written information on arthritis management; and (c) received individualized action plans for achieving their own arthritis management goal over the 6-week study. Participants in the intervention group received a telephone intervention including instruction on managing arthritis and encouragement to pursue their goal. In the sixth week the assessment tools were re-administered. Quantitative and qualitative data analysis methods were employed. **Results:** Quantitative analyses showed a significant increase in ASE and a significant reduction in depression and pain over time for both groups. Qualitative analyses revealed several themes related to benefits of telephone intervention. **Conclusion:** Study results suggest that minimal intervention (ie, written information, goal-setting, and action plans) may produce positive changes in ASE, depression, and pain in some older adults with arthritis. Furthermore, telephone intervention may assist older patients in managing their arthritis.

Key Words: arthritis, self-efficacy, telephone intervention

INTRODUCTION

The role of a physical therapist in caring for geriatric patients with arthritis typically involves teaching methods of managing the disease to enable the patient to function as independently and comfortably as possible. Although arthritis is not curable, learning to manage arthritis successfully can help to lighten the imposed burden on those afflicted and may improve their quality of life.¹ Because of the changing yet chronic nature of arthritis, patients must take an

active role in assuming much of the responsibility for management of their illness to remain as functional as possible.

Self-care may be enhanced by medical and rehabilitation information provided to the patient.¹ However, knowledge alone is insufficient. Another component of self-care is self-efficacy, which was first defined by Bandura and is a central concept of the Social Cognitive (or Learning) Theory (SCT).²⁻⁴ Self-efficacy is defined as someone's confidence in his or her ability to perform a specific behavior or to change a certain cognitive state.¹ Patients with high self-efficacy believe that they have greater mastery or control over their condition. According to Bandura,² an individual's self-efficacy is derived from 4 different sources: performance accomplishments, vicarious experiences, verbal persuasion, and emotional arousal. Interventions to improve self-efficacy may not significantly alter the physical status of individuals with arthritis, but their perception of their condition may be altered.² This change in perception may lead to a decreased focus on pain and disability aspects of their condition.

Structured intervention programs have been shown to increase self-efficacy in patients with arthritis.^{1,5-8} Most of the studies performed on this topic have employed the Arthritis Self-Management Program (ASMP) developed by Lorig and colleagues.⁵⁻⁸ The ASMP involves weekly meetings focused upon increasing the participants' knowledge of arthritis, improving the participants' arthritis self-management skills, and meeting personal self-management goals.⁹ The ASMP has been shown to be effective in improving self-management behaviors, increasing arthritis self efficacy (ASE), and decreasing perceived pain.^{10,11}

Unfortunately, not all patients are willing and/or able to attend structured educational programs such as the ASMP. For some patients, mobility, transportation and financial considerations make the logistics of attending courses problematic. Research is needed to examine whether the benefits of a program like the ASMP could be achieved by an alternate method of content delivery that would remove attendance barriers (ie, telephone intervention) so that greater numbers of patients with arthritis might be reached.

Telephone intervention may represent a viable alternative to structured classroom programs. Research has demonstrated the effectiveness of the telephone intervention method in various aspects of health care.¹²⁻²⁰ Austin et al found that telephone counseling had a significant effect on social support and physical functioning and that it improved scores on fatigue self-efficacy tests in patients with lupus erythematosus.¹² In a series of studies, patients with arthritis who received telephone interventions were found to report better health and less pain than did patients who had not received telephone calls.¹³⁻¹⁵ Another conclusion of these studies was that telephone intervention was a cost effective means of communicating with patients with arthritis.¹³⁻¹⁵ Telephone calls may be

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initiated by lay persons (eg, office staff); with health care professionals participating in the conversation when questions or problems arise.¹⁶ Castro et al found that once weekly telephone counseling had helped older adults adopt higher levels of physical activity, less intensive interventions were needed to help them maintain their new level of activity.¹⁷ Although telephone intervention has been employed in the medical management of arthritis, it has not been used to influence self-efficacy.^{13-15,21-23} Therefore, the purpose of this study was to examine the effects of telephone intervention on ASE, depression, pain, and fatigue in older adults with arthritis.

METHODS

Participants

Older adults (age ≥ 55 years) who had a primary diagnosis of rheumatoid arthritis or osteoarthritis were recruited from 2 different rheumatology clinics. The clinics' rheumatologists notified the primary investigator of potential participants for the study. Potential participants were randomly assigned to the intervention or control group. The decision to include participants with either rheumatoid or osteoarthritis was supported by prior research in which changes in behaviors and health outcomes were not significantly different for patients with these 2 forms of arthritis.²⁴ The Institutional Review Boards of Louisiana State University Health Sciences Center, the Medical Center of Louisiana-New Orleans, and the University of New Orleans approved this study. Informed consent of all participants was obtained.

Eighty-five volunteers age 55 or older (mean age = 64.4 ± 7.5 yrs) participated in the study. Demographic information for the participants is provided in Table 1. The sample was primarily female, non-white, and non-married. A majority (80%) of the subjects were unemployed, disabled, or retired. Most participants had 12 or fewer years of formal education and over half of the sample had an annual household income of less than \$15,000. Many of the participants in this study had barriers (eg, transportation, financial, and educational barriers) that impeded their ability to obtain even basic medical care, apart from individualized guidance in the management of chronic conditions such as arthritis. These individuals may not have been likely to attend a class on arthritis management offered outside of their homes. Nearly half of the participants had been diagnosed with arthritis for 10 years or longer and 70% of the participants had been diagnosed with hypertension.

Outcome Measures

Each subject completed assessments of ASE, depression, pain, and fatigue at the beginning and the end of the study. The primary outcome variable in this study, ASE, was measured using the ASE questionnaire developed by Lorig and colleagues.^{9,24} The questionnaire focuses upon self-efficacy to perform arthritis self-management behaviors, general self-efficacy, and self-efficacy to achieve outcomes. The questionnaire contains 33 items measured on a 1-10 Likert scale with anchors (1 = not at all confident and 10 = totally confident)

Table 1. Demographic Description of Participants

Variable	Category	Number (%)
Age (years)	55-64	47 (55.3)
	65-74	28 (32.9)
	Greater than 75	10 (11.8)
Gender	Female	68 (80)
	Male	17 (20)
Ethnicity	White	39 (45.9)
	Non-white	46 (54.1)
Marital status	Married	29 (34.1)
	Widowed	24 (28.2)
	Separated/divorced	23 (27.2)
	Never married	9 (9.8)
Employment status	Employed (full/part-time)	17 (20)
	Unemployed, disabled or retired	68 (80)
Educational status	9th grade or less	24 (28.2)
	10th-12th grade	25 (29.4)
	Attended college	21 (24.7)
	College graduate	15 (17.6)
Annual household income (\$)	Less than 15,000	47 (54.1)
	15,000 - 30,000	17 (20)
	30,000 - 45,000	11 (12.9)
	Greater than 45,000	10 (12)
Health insurance	Uninsured	14 (16.5)
	Medicare/Medicaid	17 (20)
	Medicare + supplement	26 (30.6)
	Private insurance	28 (32.9)
Type of arthritis	Osteoarthritis	68 (80)
	Rheumatoid arthritis	17 (20)
Arthritis history	Less than 1 year	6 (7.1)
	1 - 5 years	12 (14.1)
	5 - 10 years	25 (29.4)
	Greater than 10 years	42 (49.4)
Comorbidities	Cardiovascular disease	19 (22.4)
	Hypertension	60 (70.6)
	Diabetes	23 (27.1)
	Cancer (current/history)	13 (15.3)
	Fibromyalgia	24 (28.2)
	Lupus erythematosus	2 (2.4)
	Other chronic diseases	43 (50.6)

and can be completed in approximately 15 minutes. The values for each item (1-10) are added cumulatively. A higher score is indicative of higher ASE. The reliability coefficient (Cronbach's alpha coefficient) for the ASE questionnaire used in this study is 0.96.²⁴ The validity of the ASE questionnaire is supported by its correlation with home task performance ($r = .61$)²⁴ and with health status ($r = 0.34$ to 0.73).²⁵ Its validity is further supported by Buescher et al, who found that higher self-efficacy was related to fewer pain behaviors ($r = -0.32$ to -0.39) and lower levels of depression in patients with rheumatoid arthritis.²⁶

Depression was characterized using the Geriatric Depression Scale.²⁷ The Geriatric Depression Scale consists of 15 questions answered by yes or no. The answers are coded so that a 'positive' answer indicates depression on that item. The participant's answers are scored cumulatively relative to the coding. A score greater than 5 is suggestive of depression and indicates a need for more definitive examinations of depression. A score greater than 10 is almost always suggestive of depression. Yesavage and colleagues showed that the Geriatric Depression Scale is reliable (Cronbach's alpha coefficient = 0.94).²⁷

Perceived pain and perceived fatigue were measured using a numeric (0-10) rating scale. Mawdsley et al showed that the 0-10 numerical rating scale could be used reliably with elderly patients who suffered from musculoskeletal pain and have no cognitive disorders.²⁸

Procedures

Initial testing session

During their initial testing session each participant was assessed for baseline ASE, depression, perceived pain, and perceived fatigue. The primary investigator administered the assessments. The ASE questionnaire was administered orally. The participant and the investigator sat beside each other with the ASE on the table in front of them as the investigator read each ASE item out loud. After completion of the ASE, the investigator orally administered the 15-item Geriatric Depression Scale to each participant in a similar manner. Participants then noted their respective levels of pain and fatigue on 0-10 numeric rating scales. After completing all 4 assessments, participants answered the following question: "What is your primary goal for participating in this study?" Next, each participant received a packet containing information about the characteristics of rheumatoid and osteoarthritis, the role of self-management in arthritis, the importance of exercise, the importance of communicating with others (health care providers and support group), and the role of pain and fatigue in arthritis management. The primary investigator briefly reviewed the information in the packet with each participant. The primary investigator then developed an action plan specific for each participant based upon his or her goal for study participation. For example, for participants that expressed the goal to "walk further," the action plan was to increase the participants' walking distance in small increments over the duration of the study. Finally, each participant signed an arthritis self-care contract. The contract included the participant's goals, the participant's action plan (describing their planned activity/behavior: the amount, duration and time of day it would be performed), a 0-10 numeric scale rating of how certain they were that they would do this behavior/activity, and a calendar to record how much of the action plan they completed each day of the study. Participants signed 2 copies of their contract with one copy retained by the investigator.

Intervention

The study duration, 6 weeks, was selected to reflect the 6 week ASMP. Participants in the intervention group received weekly telephone intervention (drawn from the content of the

ASMP Workshop Leader's Manual²⁹) during the first 4 weeks of the study period and 1 final telephone call during the sixth week. Phone calls were not made during the fifth week; this was a pragmatic decision to assist the 1 examiner who was responsible for making all of the telephone calls. Furthermore, the primary content had been delivered during the first 4 calls. The control group did not receive telephone intervention.

Using telephone intervention strategies described in previous studies,^{12,17,30} each of the 4 structured phone calls included: (a) instruction in arthritis self-management, (b) an assessment of the participants adherence to their action plan, (c) encouragement to stick with their action and to practice additional arthritis self-management skills discussed in the instructional component of the intervention, and (d) the participant's concerns about management of arthritis were addressed. Each week the instructional component of the telephone intervention included new topics on managing arthritis as well as reinforcement of previous topics. Participants were asked to read the content of the week's instructional component (in the information packet distributed during the initial testing session) prior to the phone call. In addition, during each intervention participants were asked to follow the written information in their packet corresponding to the oral instruction being delivered via the telephone. During discussions of adherence to the action some participants stated that they had either exceeded the weekly goal outlined in their plan or found the program too challenging. In these cases the participant's plan was modified over the telephone.

Final testing session

During the final (sixth) week of participation, each participant completed the ASE, Geriatric Depression Scale, and the perceived pain and fatigue scales again. At this time the assessments were administered over the telephone instead of in person because most of the participants were not scheduled to return to the clinic for several months after the study had ended.

Data Analysis

Preliminary data analyses examined whether there were differences in descriptive characteristics between the control and intervention groups. The groups did not differ significantly ($P > .05$) on any of the demographic characteristics listed in Table 1.

Mixed model analysis of variance (ANOVA) procedures were performed to test the effects of group (intervention vs. control), the effects of time (pretest vs. post-test), and the group by time interaction for each of the 4 outcomes measures (ie, ASE, Geriatric Depression Scale, rating of pain, and rating of fatigue).

Participants' action plans and notes taken by the investigator during their telephone interventions were used to determine whether or not participants achieved their study goal. Notes made during the telephone interventions included direct quotes and paraphrased responses. The notes were also examined individually and collectively for the emergence of common major themes. The major themes were coded and grouped together for further analysis.

RESULTS

Quantitative Data Analysis

Means and standard deviations for the 4 outcome measures prior to and after the intervention are reported in Table 2. An ANOVA indicated that time had a significant effect on ASE scores for both the intervention and control groups (Table 3). Participants in the control and intervention groups had higher levels of confidence (self-efficacy) in managing their arthritis at the end of the study than they did at the beginning (Table 3). While the intervention group started with a higher (but not statistically different) ASE score than the control group, the magnitude of change in the ASE score was larger ($P > .05$) for the control group. Participants in both the control and intervention groups also exhibited significant reductions in depression and perceived pain during the course of the study (Table 3). The intervention group reduced its average GDS score by 1.0 on a 0-15 scale, compared to the control group's average GDS score decreasing by 0.2 ($P > .05$). Similarly, the intervention group showed greater (but not sta-

tistically different) improvements than the control group in both pain and fatigue (Table 3).

Qualitative Data Analysis

More participants in the intervention group compared to the control group stated that they achieved their study goal (80% vs. 62%), but the difference was not statistically significant ($\chi^2 (1, N = 85) = 3.22, P = .07$). A majority of participants (67% of the total) selected "walking further" as their study goal. A high percentage of participants in both the intervention (84.6%) and the control groups (74.2%) who selected "walking further" stated they were able to reach or exceed their goal for walking.

In analyzing qualitative data obtained during telephone interventions 3 major themes emerged (Table 4). The first major theme that emerged included examples of how the telephone intervention had been useful to the participants. Telephone intervention helped some participants set and work toward a long desired (but unfulfilled) goal of initiating better health care practices. An example of this was one 60-year-old participant ("Kathy") getting started on an exercise program. Kathy had never exercised regularly before participating in the study and vowed to continue to do so; she was sorry to see the telephone calls end. She mentioned how impressed her friends and family were with her.

Another apparent benefit of telephone intervention was the facilitation of access to medical care. When problems arose, some participants were overwhelmed by the task of trying to reach their physicians. The weekly phone calls allowed the investigator to provide the participant with instruction and reinforcement in strategies for reaching and effectively communicating with their physicians. "Carlos," a 59-year-old Hispanic part-time cook with less than 9 years of

Table 2. Descriptive Statistics (mean \pm standard deviation) for Dependent Variables at Baseline and 6 Weeks

Dependent variable	Group	Baseline	6-weeks
Arthritis Self-Efficacy	Intervention	247.1 \pm 54.2	253.4 \pm 58.9
	Control	226.0 \pm 63.0	248.2 \pm 59.2
Geriatric Depression Scale	Intervention	4.5 \pm 3.5	3.5 \pm 3.7
	Control	4.4 \pm 4.2	4.1 \pm 3.9
Pain numeric rating scale	Intervention	6.9 \pm 2.8	5.2 \pm 3.1
	Control	6.4 \pm 2.8	5.5 \pm 3.0
Fatigue numeric rating scale	Intervention	6.0 \pm 3.2	5.1 \pm 2.9
	Control	5.8 \pm 3.1	5.6 \pm 3.1

Table 3. Summary of Repeated Measures ANOVA Results

Dependent variable	Source	Sum of squares	df	Mean square	F (p)
Arthritis Self-Efficacy	Group (G)	7340.8	1	7340.8	1.27 (.273)
	Error	7340.8	83	6032.3	
	Time (T)	8642.2	1	8642.2	9.21 (.003)
	G x T	2683.4	1	2683.4	2.86 (.095)
	Error	77907.5	83	938.6	
Geriatric Depression Scale	Group	2.3	1	2.3	.088 (.767)
	Error	2136.0	81	26.4	
	Time (T)	19.2	1	19.2	5.61 (.020)
	G x T	4.2	1	4.2	1.22 (.272)
	Error	277.1	81	3.4	
Pain numeric rating scale	Group (G)	.4	1	.4	.03 (.860)
	Error	1059.5	83	12.8	
	Time (T)	68.2	1	68.2	16.10 (.000)
	G x T	6.1	1	6.1	1.45 (.232)
	Error	351.8	83	4.2	
Fatigue numeric rating scale	Group (G)	1.0	1	1.0	.07 (.787)
	Error	1093.7	83	13.2	
	Time (T)	12.7	1	12.7	2.26 (.374)
	G x T	4.5	1	4.5	.80 (.374)
	Error	469.1	83	5.6	

formal education and a very low annual household income, was experiencing a significant exacerbation of his arthritis symptoms and was not scheduled to return to the hospital Rheumatology Clinic for more than a month. The investigator was able to assist Carlos in getting a much earlier appointment. More importantly, Carlos was taught how to independently navigate this large, inner city hospital appointment system so that in the future he could make his own appointments. This was an example of using verbal persuasion to help Carlos gain self-efficacy in managing his condition. Once Carlos had successfully intervened in the scheduling and management of his care, it was hoped that the self-accomplishment would further enhance his self-efficacy.

The second major theme that emerged was the participants' desire to adhere to their action plan. Some of the participants expressed

Table 4. Major Themes that Emerged During Coding and Analysis of Qualitative Data

1. Ways in which the study was useful to participants.
1. A. Establishing an intervention program (action plan).
1. B. Working toward a goal.
2. Adhering to the plan or making changes to it.
3. Evidence of enhanced participant understanding of their condition.

their adherence as a way to deal or cope with their arthritis or other factors in their lives. Other participants simply dedicated themselves to their accepted task. Action plans for most of the participants included initiation and adherence to fitness activities. Qualitative data analyses indicated that the telephone interventions helped some subjects adhere to their fitness activities.

The third major theme was increased knowledge about arthritis and self-management of this condition. Initially, many participants lacked even a basic understanding of their disease; in some cases they were unable to name the type of arthritis with which they had been diagnosed. This lack of understanding was observed even in participants who had been dealing with their arthritis for many years. Although increases in knowledge were not directly assessed, the questions, comments, and actions of participants over the course of the intervention were indicative of increased awareness and knowledge about their condition.

DISCUSSION

The study findings revealed a significant increase in ASE and significant reductions in depression and perceived pain over time; however, the changes were not unique to the telephone intervention group. Discussion with several members of the control group during the final phone call indicated that these individuals had read the information packet and had adhered to the action plan given to them during the initial testing session. This may have been a factor in the lack of significant differences between the control and intervention groups, especially on the post-ASE scores. Some of the participants in the control group may have been sufficiently self-motivated to use the material presented to them, along with their plan of action, and derive similar benefits as did the telephone intervention group. From both practical and clinical standpoints, this behavior was very desirable; some patients can be given information and assistance in setting goals and developing an action plan, and use it to pursue self-management behaviors without the need for additional external reinforcement or guidance (ie, the telephone calls). This interpretation suggests that, for some patients, minimal intervention might be sufficient to raise ASE.

A modified design, involving a third group who simply completed the outcome measures before and after the study, may have helped to differentiate the relative effects of the educational materials, goal setting, action plan, and telephone intervention on the outcome measures. This rationale has been supported by other research. Burckhardt et al, in a randomized, controlled trial examining the effects of education and physical training on patients with fibromyalgia, described similar study design concerns.³¹ In their study, 1

group served as the control and the 2 other groups received different levels of the intervention. The 2 intervention groups both received initial education, but only 1 of the 2 groups also received guidance in physical training. The group that received education only achieved positive results that were similar in self-efficacy and other factors to the group that received both education and physical training.³¹

The telephone intervention design of the current study may have contributed to another potential explanation for the lack of significant group effect. It is possible that the social nature of the ASMP (the group classroom setting) may contribute to its positive outcomes, particularly increases in arthritis self-efficacy. As previously stated, performance accomplishments, verbal persuasion, and vicarious experiences are all elements of the Social Cognitive Theory that contribute to increased self-efficacy. These elements are all more likely to be present in a group setting.² Hence, it may be difficult to replicate the social nature of the ASMP over the telephone.

The sample used in this study was different in composition from most of the samples used in previous ASMP/ASE research.⁶⁻¹⁰ Since most of the samples used in previous research tended to have more years of formal education, belonged to a higher socio-economic status, and were more predominantly white than the sample used in the current study, it has been surmised that many of the participants in the current study either would not or could not have attended a program like the ASMP.

Receipt of the informational packet and an action plan for achieving a personal arthritis management goal (common to both the intervention and control groups) might be interpreted as a form of intervention. It should be noted that many of the participants needed some guidance in helping to establish a study goal. The last question on the initial demographic data/interview sheet was "What is your primary goal for participating in this study?" Participants who were still a little confused about the overall purpose of the study were not sure what to say when asked this question. When this occurred the investigator proceeded with the intake in an attempt to clarify the purpose of the study for the participant. The role of ASE was again explained to each participant, as well as the nature of their involvement in the study. Finally the development of the action plan was discussed with each participant. At this point the goal question was again asked of each participant. Nearly all of the participants could then define a goal in more concrete terms (ie, related to their action plans). Consistent with the goals of individuals in other diagnostic groups, a majority of participants in this study selected improved walking as their primary goal.³²

Qualitative results from the study indicated that participants valued the telephone intervention. Several participants reported that the individualized arthritis management program designed for them helped them to initiate and maintain some form of exercise program for the first time in their lives. A related theme that several participants mentioned during the calls was that the telephone interventions gave them confidence and reassured them that it was appropriate for older adults to exercise, even if they had not done so

before. This is a message that is not always reinforced in our culture. Blair and colleagues proposed that media and advertising campaigns may increase older adults' apprehension levels about exercising by portraying exercise as something that must be highly strenuous to be health-promoting.³³ Information gained in the study leading to the initiation of an exercise program is a practical illustration of the personal accomplishment aspect of Social Cognitive Theory.³⁴

Positive reinforcement provided to participants during the telephone interventions also emerged as a related theme during the interviews. Lack of positive support or even disapproval from physicians, family members, and close friends may also serve as deterrents to older adults considering a fitness program. O'Brien-Cousins and Burgess examined the role of the physician in this area and concluded that most people do not get detailed advice or information from their physician regarding starting an exercise program.³⁵ Telephone intervention might be an appropriate manner of providing positive reinforcement and encouragement.

Several of the participants commented on how much they enjoyed receiving the telephone calls; it seemed apparent that they may not have been receiving much social support from other sources. Social support has been linked to optimal health in several ways;³⁶ it is important to the maintenance of good health,³⁷ it reduces psychological distress,³⁸ and it has been shown to reduce mortality in elderly populations.³⁹

It was hoped that fitness behaviors initiated and adhered to during the study might transform into long-term positive lifestyle changes that might assist in self-management of the participants' arthritis. The relationship between self-efficacy and adherence has been examined. McAuley et al performed a series of studies examining various aspects of the effects of exercise self-efficacy on short- and long-term adherence to exercise.⁴⁰⁻⁴² Self-efficacy was shown to be the main factor in helping an individual initiate an exercise program and in helping the individual continue with the program after the formal supervision had ended.

Learning styles vary among learners, and learners' needs are often best served when the teaching methods can adapt to those learning styles.^{43,44} The form of teaching that was used in this study was one that did not attempt to adapt to the individual learning styles of the participants. The same teaching style was used consistently throughout the study. The style of teaching used in telephone intervention is an area that has not been well explored among patients with arthritis. Doing so might be appropriate in the future.

Possible limitations of the study include the lack of a true control group and the sample size. As discussed earlier, future research might include a third group that does not receive any of the study components (ie, the information packet, study goal, action plan, or telephone calls). The choice to provide the control group with all study components except telephone intervention was made to focus directly on effects of the telephone methodology. However, from a clinical perspective it may not be ethical to withhold the information packet and action plan. The sample size ($n = 85$) may not have been sufficiently large to detect a small effect, especial-

ly between groups. According to Aron and Aron, for medium effect size 33 participants would be needed ($d = .50$); for a small effect size 196 participants would be needed.⁴⁵

CONCLUSIONS

Participants in both the control and telephone intervention group evidenced an increase in ASE, a decrease in reported depressive symptoms, and a decrease in reported pain and fatigue. Qualitative data obtained from participants in the intervention group revealed they valued the phone calls and benefited from them in ways that may not have been captured by the dependent measures. Telephone intervention is a low cost alternative that may offer enhanced communication and support from health care providers, particularly for patients who might have difficulty accessing a high level of care. Telephone intervention could easily be implemented in a physical therapy clinic. Further research is needed to test whether telephone intervention is an effective means of optimizing patient outcomes.

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