

## Compliance in the Peer Approaches to Lupus Self-Management (PALS) Study: Program Evaluation and Comparison to Existing Support Modalities for Patients with Rheumatic Conditions

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### Abstract

**Background:** Peer Approaches to Lupus Self-Management (PALS) was a peer support program tailored to the population most affect by systemic lupus erythematosus (SLE); African American women.

**Methods:** Compliance in the PALS study was measured as weekly phone call sessions completed by each mentoring pair. Additional compliance data were collected from other interventions providing peer support and education with the purpose of improving quality of life and/or disease activity. Compliance data were compared to determine factors associated with higher levels of compliance in this disease population.

**Results:** PALS proved to be a highly acceptable intervention with regard to the counseling, support, and education extended to lupus patients. Compliance data from the program showed that it was highly accessible with 100% of users in the study period completing all of the weekly mentoring sessions. Compared to other interventions, which reported compliance rates ranging from <50-82%, patients in the PALS program were much more compliant to protocols and schedules. PALS compliance was most similar to that of the LupusLine® peer support telephone program, which achieved 97% compliance.

**Conclusions:** Despite limitations, results indicate patient satisfaction, positive impact, and increased compliance with the approach of the PALS study. Other programs in similar populations struggle with compliance, whereas PALS and LupusLine® users were highly compliant. A factor common to both programs was the use of trained peers to deliver support via telephone calls, possibly indicating that this delivery method may be particularly effective for promoting compliance in this population.

**Keywords:** Systemic lupus erythematosus; Peer mentoring; Program evaluation; Social support; African American; Women; Compliance

### Introduction

Systemic lupus erythematosus (SLE) is a complex chronic autoimmune disorder that causes substantial morbidity and mortality and results in significantly reduced health related quality of life among those affected [1]. Primarily the disease manifests in inflammation that can affect any organ system or part of the body and most often occurs in periods of flares interspersed by periods of reduced disease activity [1]. Noteworthy advances in the treatment of the disease have been implemented in recent decades and have wrought important improvements in life expectancy and quality of life, however no cure yet exists and traditional medical treatments carry notable side effects [2]. For these reasons, other disease management modalities have gained increasing attention in research and patient care [3-6].

One such example is peer mentoring, which may provide specific benefits to patients disproportionately affected by the disease, such as African American women [6]. Furthermore, phone support programs specific to individuals with chronic diseases have been posited and previously tested, in conditions such as cancer and retinal diseases, as a

cost effective means to provide support and education [7-10]. The Peer Approaches to Lupus Self-Management (PALS) intervention is one such program that combines these two strategies in order to provide an intervention that is easily accessible to patients with SLE. This investigation seeks to assess PALS participant compliance with the weekly phone support regimen that the program entailed. Additionally, by comparing compliance data from PALS to several other support and management modalities in SLE and rheumatic disease, this work seeks to explore the relationship between compliance and delivery methods in order to better understand the needs of rheumatic patients and how best to deliver non-pharmaceutical interventions.

### Methods

#### Detailed Description of PALS

The PALS feasibility pilot study enrolled 27 African American women with SLE, 7 of which served as mentors while the remaining 20 served as mentees. Sample size was not determined for statistical power as the primary aim of the study was to determine program feasibility and acceptability. The sample was limited to African American women due to the disproportionate severity and frequency

of SLE therein as well as evidence supporting the notion that social support interventions may be particularly impactful among this cohort [11-14]. Participants were recruited using invitational letters sent to eligible patients in the Medical University of South Carolina's lupus database and through advertisement flyers posted in rheumatology and research clinics at The University. Mentors were deemed competent in the self-management of their condition by their rheumatologist whereas mentees were individuals whom were less competent and confident with disease self-management. Mentors were assigned mentees based on shared demographic criteria such as age, marital status, and geographic location, among other characteristics. This matching resulted in 6 groups of 1 mentor with 3 mentees, and 1 group of 1 mentor with 2 mentees. Mentors spoke to each of their mentees weekly for approximately 1 hour in sessions that consisted of 3 distinct parts: introduction/discussion, structured education, and problem solving. Materials to be covered each week were dictated ahead of time by study staff based on previously validated programs. Weekly structured education sessions were guided by PowerPoint slideshows that study staff provided in both physical and digital formats [15].

### Data Collection and analysis

Mentors in the PALS pilot kept weekly logs that served as records of their interaction with their mentees. This included the number of calls they attempted with each mentee every week, the duration of the calls, and any other notes they felt were important from that week's sessions. Reports in the mentor records were validated by weekly contact with the principle investigator of the study and weekly contact with mentees by a study coordinator. Qualitative data are not reported here in order to center the examination on programmatic delivery methods and associated compliance; for qualitative finding the reader is referred to [16,17].

### Selection of comparison studies

Studies were selected for the narrative review based on their relevance to support and self-management strategies for lupus and rheumatic patients. Evidence-based self-management programs designed to encourage social support and promote health education, among lupus patients, have resulted in reductions in pain, improvements in function, and delays in disability [3,15,18-26]. Specifically, arthritis self-management education delivered in small-group, home study, computer, and Internet formats have yielded significant improvements in health distress, self-reported global health, and activity limitation, with trends toward improved self-efficacy and stress management [3,4,25,27,28]. Although there is no single widely used evidence-based self-management intervention for lupus patients [29], two programs that have been successful in improving outcomes in patients with arthritis are the Arthritis Self-Management Program (ASMP) and the Chronic Disease Self-Management Program (CDSMP). Other interventions have been developed or adapted, and subsequently tested and reported in the scientific literature. Generally, these interventions are also characterized by education/counseling sessions delivered over several weeks or months, but they are highly heterogeneous in their approach and the content they deliver. The studies presented in the current report are broadly representative of existing intervention modalities tested to improve psychosocial, self-management, and self-efficacy outcomes for SLE and other rheumatic patients. Studies that did not report patient compliance or adherence rates were not included in the comparative review, but are mentioned

to expand the discussion of the outcomes of such interventions. Compliance is assessed as the percent of study sessions (or comparable metric) completed, unless another condition suffices as intervention completion according to discrete study protocols. Methodologies, study populations, and compliance data are compared in order to reveal factors associated with improved intervention compliance and outcomes.

### Description of the lupusLine®

The LupusLine®, a telephone-based peer counseling service, appears to be the closest effort to a lupus-specific peer mentoring intervention in the U.S. to date [30,31]. The Hospital for Special Surgery's LupusLine® is a free telephone counseling service staffed by trained volunteers who have SLE or are close family or friends of people living with lupus. The service began in 1988 and offers ongoing emotional support and education by telephone to peers with SLE and their loved ones. The mission of the program is to enhance coping, self-esteem, and health-related behaviors, and reduce feelings of isolation and anxiety common in people living with SLE. Contact must be initiated by the caller, who is then professionally screened by a social worker before being matched with a volunteer. Matching is based on shared experiences (e.g., parenting, work-related concerns, life stage, and demographic characteristics) and peer counselor availability. Volunteer training consists of an 8-week, 20-hour program focused on listening skills and the impact of SLE, followed by monthly presentations to ensure program quality. Once matched with a peer counselor, LupusLine® callers access the service by scheduled appointments [30,31]. Over the last 20 years, more than 19,000 client contracts have been established [32]. The most frequently cited reasons for calling were treatment related concerns and emotional concerns, and callers reported that the most helpful features of LupusLine® were emotional support/empathy and increased knowledge/understanding of lupus [33].

### Description of the systemic lupus self-help (slesh) course

The Systemic Lupus Self-Help (SLESH) Course teaches coping skills and information about SLE, provides support, fosters problem solving, cognitive reframing, decisions making, and efficacy enhancement to SLE patients. The intervention is delivered through 7 weekly classes consisting of groups of 8-18 adult lupus patients lasting approximately 2 ½ hours each [26].

### Description of the arthritis self-management program (ASMP)

The ASMP is a 6 week course that is targeted towards improving self-efficacy, pain symptoms, and care utilization among arthritis patients. The course is led by a trained instructor for 2 hours weekly. Attending 4 of the 6 classes constitutes program completion [27,34].

### Description of the chronic disease self-management program (CDSMP)

Similar to the ASMP, the CDSMP is a course involving six weekly sessions led by two trained instructors that focuses more broadly on the skills related to self-care and self-efficacy in patients managing chronic illness. Each of the weekly classes lasts approximately 2 ½ hours. Also similar to the ASMP, completion of at least 4 of the 6 sessions constitutes course completion [35,36].

## Description of general therapy interventions

While many studies seeking to understand how best to improve self-management practices and convey support to rheumatic patients follow the model of previously validated programs, this is not always the case. As such these interventions are heterogeneous in nature but must also be considered. In one study, supportive psychotherapy group sessions were conducted by trained therapists according to methods previously utilized in a ten year study at Stanford University [37]. Supportive-expressive therapy involves coping skills training in addition to group support coupled with interpersonal existential therapy. Topics covered in the 15 therapy sessions included medical status and treatment, doctor-patient relationships, family and social networks, group therapy issues, illness coping skills, fatalism, life values and principles, and self-image. The first 12 sessions were held weekly, with the remaining 3 serving as booster sessions held monthly at the end of the initial 12 weeks. Patient centered counseling provides supportive therapy to the participants and according to the authors "formal [counseling] techniques are minimized while the therapeutic relationship is the main emphasis" [37].

## Results

### Pals compliance assessment

While some of the weekly sessions were delayed, all 12 sessions were completed by the 7 mentoring groups yielding a compliance rate of 100%. An average of 1.24 (SD=0.53) call attempts were made by mentors to their mentees each week. The average length of sessions was 54.1 min (range 0-105 min). The mode of contact after an initial face-to-face meeting was telephone only for all mentoring pairs [19].

### Comparison with lupusline®

According to an initial follow-up evaluation to assess current user demographics, reasons for calling, satisfaction, and impact on behaviors and feelings, 36 users were matched with a peer counselor during 2005. Most respondents (92%) were female, 64% of callers were between the ages of 31 and 50, and the majority (60%) were white (16% African American, 8% Latino, 8% Asian American, and 8% other). 40% were employed fulltime. 88% of callers had lupus themselves and 12% were family members. Time since diagnosis averaged 6.8 years 56% of callers reported that lupus interfered with their lives most or all of the time. About half (48%) used LupusLine for 6 or more phone sessions, with 36% using the service for more than 12 sessions. More than 60% of respondents reported feeling better able to cope, more in control, less depressed, less anxious, and less alone, along with better understanding and talking more comfortably with others about their lupus, and attributed these changes to the utilization of LupusLine® [33]. More recently, between January and February of 2017 there were 204 calls to the LupusLine® and its 8 volunteer counselors. Of these callers, 73 were SLE patients or their family members calling for the first time, 41 of whom did not require matching and indicated their needs were met after the initial interaction with the screening social worker. The remaining 32 individuals were matched with a peer counselor, 31 of whom followed through with their scheduled initial counseling sessions yielding a compliance rate of 96.68% (Table 1) [38].

### Comparison with the systemic lupus self-help course

Between 1987 and 1990 the course was tested at 17 sites across the United States on a total of 313 SLE patients. This study sample was 96% female, was an average age of 45.8, and predominantly white (83% white, 8% black, 9% other races) (see Table 1). Following the intervention, participants experienced decreased depression, increased enabling skills, and increased time spent relaxing and exercising. Compliance data was only available for 104 of the participants; on average they attended 5.6 of the 7 classes and ranged from attending only 1 of the classes, to all 7. For the purposes of comparison the compliance rate will be considered 71.43%, which is the average percent of the classes that study participants attended [26].

### Comparison with arthritis self-management program (ASMP)

As shown in Table 1, in a randomized controlled trial, 104 RA patients were assigned to either a usual care or treatment group which participated in the ASMP. The intervention cohort (n=51) was predominantly African American and over 75% female with an average age of 54.2. The six week course was delivered by a trained instructor identified by the Georgia Chapter of the Arthritis Foundation. 25 of 51 (49.02%) participants who were placed in the intervention group and received the intervention attended at least 4 of the sessions. A dose response was observed in this study wherein patients who completed the course were more likely to achieve significant clinical improvements; however those who did not complete the course experienced no significant improvements [34].

Lorig and colleagues performed a complex randomized controlled trial that tested the effectiveness of a tailored self-management intervention based on the ASMP and delivered by mail as compared to the traditional ASMP described above in a population of rheumatoid (RA) and osteoarthritis patients. This trial included two arms, one which tested the effectiveness of the tailored intervention against a usual care condition and the other tested the tailored intervention against the classic ASMP. In the first arm, 522 individuals were randomized to the treatment condition (tailored arthritis self-management mailing) whom were an average age of 62.2 and 77% female, racial data was not provided. Of these participants, 65.5% completed at least 3 of the 4 mailing and overall the group experienced no short term improvements in their disease condition. In the second arm 341 participants were enrolled, these patients were an average age of 65.2 years old and were 75% female, racial data was not provided. Of those assigned to the ASMP treatment condition 30% did not attend any of the six sessions and the group attended an average of 4.6 sessions. The number of mailings completed by those individuals in the tailored intervention condition was not presented in the same way as in the first arm, however it is noted that 12% did not participate at all, which is elevated as compared to the first arm in which only 10.7% did not participate. Overall the compliance rate for this study will be considered <70% [27].

### Comparison with chronic disease self-management program (CDSMP)

Table 1 shows one study of the CDSMP that was carried out among a cohort of low-income African American women with SLE (average age of 43.8) and did not include a control arm or comparison group. Of the 57 individuals who consented to participate, 47 (82.46%) attended at least 4 of the sessions. Following the intervention participants

experienced improved health related quality of life, self-efficacy, self-management behaviors, treatment adherence, and had fewer outpatient medical visits than prior to baseline [35].

Another similar study tested the effectiveness of the CDSMP as compared to the ASMP (NB: Geoppinger et al refer to it as the Arthritis Self-Help Course which is a semantic rather than methodologic discrepancy) in a population of 416 arthritis patients, of whom, 365 (87.74%) were African American, >75% were female, a mean age of 64 years old and an average of 4 comorbid conditions. 231 of these participants were enrolled in the ASMP, 173 (74.89%) of whom completed 4 or more of the classes whereas 185 participated in the CDSMP, of which 147 (79.46%) completed at least four of the classes. ASMP participants had significant improvements in self-efficacy, stretching and strengthening exercises, aerobic exercise, and general health following the intervention whereas individuals in the CDSMP improved in the domains of self-efficacy, disability, pain, and general health. At four month post-intervention improvements conferred in the CDSMP cohort remained stronger than that of the ASMP, however by 1 year post-intervention, improvements were minimal [36].

### Comparison with general therapy interventions

While many studies seeking to understand how best to improve self-management practices and convey support to rheumatic patients follow the model of previously validated programs, this is not always the case. As such these interventions listed in Table 1 are

heterogeneous in nature but must also be considered. In one study of supportive-expressive therapy, 133 female SLE patients living in Canada were recruited for the study. 64 participants were randomized to the therapy group, whom were an average age of 42 at baseline, 87% were white with the other 13% made up of all of all other races (not parsed by original authors). They attended an average of 12.02 (SD=2.98) out of the 15 (80.13%) sessions offered. There were no differences in outcome measures observed between the experimental group and control group at any of the time points assessed in the study [39].

Maiskiak and colleagues tested the effectiveness of a person-centered, nondirective, telephone based counseling intervention in patients with SLE or RA. Over the course of six months, patients completed monthly calls with trained, masters-level counselors in sessions that lasted between 30 and 15 minutes. The study under review randomized patients into either a patient-centered counseling group (8 SLE patients, 28 RA patients) or a control condition (7 SLE, 30 RA). All participants in the study were female; the SLE patients in the counseling group were all white and were a mean age of 40.43, whereas the RA patients in the same group were 43% white and a mean age of 52.97. Only one patient was lost to follow-up and every participant (100%) in the counseling group completed at least 4 of the sessions with 26 (72.22%) completing at least 5 sessions, and 10 (27.78%) completing all sessions. Following the intervention improvements in psychological status were observed in SLE patients but not RA patients [40].

Reference	Method	Population	Outcomes	Reported Compliance
<b>Peer approaches to lupus self-management</b>				
Tsokos [1]	12 week feasibility pilot of SLE self-management intervention, trained peer mentors delivering weekly education content to mentees	27 African American SLE patients	Reduced anxiety and depression, trends towards reduced disease activity	100.00%
<b>LupusLine®</b>				
Rosario et al. [2], Greco et al. [3]	Telephone based peer counseling service. SLE patients call a trained peer volunteer who matches them with a social worker to deliver support.	109 SLE patients or their family members, 92% female, 64% aged 31-50, 60% white (16% African American, 8% Latino, 8% Asian American, and 8% other), 40% employed full time, 88% had lupus themselves and 12% were family members, average time since diagnosis was 6.8 years	Better able to cope, more in control, less depressed, less anxious, and less alone, along with better understanding and talking more comfortably with others about their lupus	96.68%
<b>Systemic lupus self-help course</b>				
Lorig et al. [4]	7 week Systemic Lupus Self-Help Course. Weekly 2 ½ hour sessions covering coping skills and disease information, provides support, fosters problem solving, cognitive reframing, decisions making, and efficacy enhancement	313 SLE patients (compliance data only available for 104), 96% female, average age of 45.8, 83% white, 8% black	Decreased depression, increased enabling skills, and increased time spent relaxing and exercising	71.43%
<b>Arthritis self-management program</b>				
Williams et al. [5]	6 week Arthritis Self-Management Program. Weekly 2 hour sessions led by a trained instructor covering self-efficacy, pain symptoms, and care utilization.	51 rheumatoid arthritis patients in the intervention group, average age of 54.2, 78.8% female, 90.4% African American	Outcome observations hampered by low compliance rate. Clinically significant disease improvements among patients who attended the most classes	49.02%



Williams et al. [6]	Randomized controlled trial comparing Arthritis Self-Management Program with a tailored self-management course delivered by mail	Arm 1: 522 patients (average age of 62.2 and 77% female) participated in the tailored intervention. Arm 2: 341 patients (average age of 65.2 years and were 75% female) were randomized to either tailored intervention or traditional ASMP	No short term improvements in Arm 1. Results were mixed for Arm 2 and varied over time, but improvements were observed in both treatment groups	<70%
<b>Chronic disease self-management program</b>				
Balasu brama et al. [7]	6 week Chronic Disease Self-Management Program designed to improve disease self-management and self-efficacy. Single arm, pre/posttest design	57 low-income African American women, average age of 43.8	Improved health related quality of life, self-efficacy, self-management behaviors, treatment adherence, and had few outpatient medical visits	82.46%
<b>Comparative effectiveness of ASMP and CDSMP</b>				
Turner et al. [8]	Multi-site study testing the comparative effectiveness of the Arthritis Self-Management Program and Chronic Disease Self-Management Program among arthritis patients	416 arthritis patients, 87.74% African American, >75% female, average age of 64 years	Significant improvements in general health and self-efficacy among both groups, improvement maintained longer among CDSMP patients	ASMP: 74.89% CDSMP: 79.46%
<b>Supportive expressive therapy</b>				
Lee et al. [9]	Randomized controlled trial of a supportive-expressive group psychotherapy intervention. 12 weekly sessions and 3 subsequent monthly booster sessions	133 Canadian female SLE patients, 64 randomized to intervention group, average age of 42 and 87% white	No significant differences in any outcomes measured between experimental and control group at any time point	80.13%
<b>Patient centered counseling</b>				
Viau et al. [10]	Randomized controlled trial of a monthly person centered telephone based counseling interventions delivered over the course of 6 months	73 female rheumatoid arthritis and systemic lupus patients. 28 and 8 in the counseling group and 30 and 7 in the control group respectively	Improvements in psychological status among SLE patients in the intervention group, other outcomes showed no improvements for SLE or RA patients	27.78%

**Table 1:** Program descriptions and reported compliance rates.

### Studies not reporting compliance/adherence data

The vast majority of studies reviewed for this article did not report compliance data, or did not report those data in a way that was conducive to comparison. Nevertheless, many of these interventions were effective in improving disease status and management in rheumatic patients. These interventions led to significant improvements in depression [20,21,23,41], patient limitations or physical functioning [3,4,20,41,42], health distress [4; 20,41], fatigue [4,20,23,41,43], pain [3,4,20,41], self-efficacy [4,20,28,41,43,44], anxiety [21], stress [4,21,45], quality of life [21], vitality and health perceptions [42], mental health [42,43], self-esteem [22], psychological or psychosocial functioning [3,22], illness intrusiveness [25], communication [43], coping [23,43], social support [43], distress [45] [44], and health status [28].

### Discussion/Conclusion

The Peer Approaches to Lupus Self-management (PALS) intervention program was a highly feasible and acceptable program that has the potential to provide benefits not yet achieved by other evidence based support and self-management interventions currently available to African American women with SLE [46]. Compliance data suggest that this intervention modality is highly accessible to SLE patients seeking additional social support and disease education. While compliance is very high for PALS participants (i.e., 100% compliance), comparatively, SLESH, ASMP, CDSMP, and other interventions fell well below this level, ranging from approximately 82% to below 50%.

This is consistent with past findings that despite recommendations from numerous national agencies that self-management education complement medical care [25,47-51], arthritis self-management education has reached a limited number of people. Many Arthritis Foundation chapters have had difficulty disseminating arthritis self-management education programs. Additionally, many vulnerable populations have not been included in study samples [24,25,36,52-55]. Compliance has been cited as a persistent problem in standardized programs [34]. One study reported that less than 50% of a closed eligible population participated, even when Internet and small-group programs were offered repeatedly over many years [56], suggesting that interventions may not be reaching the largest portion of lupus cases.

In contrast, the LupusLine® program managed to achieve nearly 97% compliance, using their telephonic peer counseling delivery method. Many of the intervention modalities reviewed required in-person attendance that necessitates participant travel. Travel has been noted as a significant barrier to treatment for SLE patients, suggesting that it may likely be a major factor reducing study compliance [57-59]. The accessibility and convenience of telephone-delivered interventions by the Lupusline® and in the PALS study eliminates travel burden, which in turn appears to have a positive effect on participation and compliance. While overall compliance did not reach the levels achieved by PALS and LupusLine®, the one study reviewed that conveyed its intervention by phone had just one non-completer and all participants participated in 4 or more intervention calls [40].

It is unlikely that differences in compliance were due to intervention content, as the PALS intervention included adapted educational

content from the SLESH, CDSMP, and ASMP and treatment credibility and acceptability measures for each of the studies discussed were generally high [46,60,61].

However, PALS educational content was further tailored to African American women with six added sessions based on cultural issues reported as important to African Americans in earlier research [20,62] and documented unmet needs in the African American SLE patient community [63,64]. To address unmet needs around understanding the medical regimen, including considerations around depression, medication concerns (possible side effects and interactions), and physical symptoms (pain and fatigue), culturally relevant sessions on 'Complications' and 'Self-monitoring' were developed. In response to unmet needs around trust in the provider, communication with providers, and receiving adequate information from medical staff about treatment side effects, so too were sessions on 'Coping' and 'Trust' developed. Lastly, unmet needs around having access to telephone support and advisory services and having assistance with knowing which symptoms should trigger a doctor visit [29,65,66] are addressed by the PALS study design (i.e., telephone delivery of intervention) and sessions devoted to less frequently discussed topics of 'Body image' and 'Sexuality/sexual health'.

Cultural relevance and acceptability of PALS content that was uniquely fitted to African American women with SLE may have further contributed to participant compliance, and other studies have highlighted the potential of peer mentoring as a culturally sensitive means to improving health behaviors and outcomes in low income and minority groups in whom trust in the health care system may be lower than in the general population.[65,67-71] The success of relationship-centered peer mentoring has been attributed to the non-hierarchical, reciprocal relationship that is created by sharing similar experiences and the tendency of peer mentoring relationships to be consistent with the individual's social and cultural beliefs [72-74]. Peers who have experience in managing their lupus may be in a better position to share knowledge and experience with which others may often not be able to relate [72]. This can establish trust and in turn decrease disparities in health care outcomes [75].

PALS and LupusLine® have two important methods in common; 1) peer mediated delivery and 2) delivery by phone. As previously noted, peer mentoring is an intervention delivery method posited to have particular impact in minority populations across a variety of conditions [76-88]. The fact that LupusLine® and PALS are different programs with varying entry methods, time commitments, and activities required of participants, provides insight into important factors to consider in the delivery of support and management interventions for SLE patients; 1) Accessibility to the intervention is crucial to its utilization and 2) Peer-to-peer delivery continues to be a viable and acceptable means by which to engage these patients. While there are important limitations to take into account with these conclusions, such as small and mostly homogenous populations in the various studies discussed, the lack of compliance data for many studies, as well as the majority of data being self-reported by patients, our findings further support the potential impact of peer mentoring in patient populations with rheumatic diseases. In practice and research, peer mentoring interventions can be an effective means to provide education, support, and resources that often lie beyond the scope of traditional medical regimens. Together, with an easily accessible delivery method (i.e., by telephone) future interventions using these modalities may provide health and quality of life improvements that have not yet been attainable and serve as a sustainable solution to

persistent disparities in the rheumatic disease population and particularly among African American women.

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