FEATURE ARTICLE

Recreational Music-Making: A Cost-Effective Group Interdisciplinary Strategy for Reducing Burnout and Improving Mood States in Long-Term Care Workers

Barry Bittman, MD, Karl T. Bruhn, Christine Stevens, MSW, MT-BC, James Westengard, and Paul O. Umbach, MA

Abstract

Objectives: *This controlled, prospective, randomized study examined the clinical and potential economic impact of a 6-session Recreational Music-making (RMM) protocol on burnout and mood dimensions, as well as on Total Mood Disturbance (TMD) in an interdisciplinary group of long-term care workers.*

Methods: *A total of 112 employees participated in a 6-session RMM protocol focusing on building support, communication, and interdisciplinary respect utilizing group drumming and keyboard accompaniment. Changes in burnout and mood dimensions were assessed with the Maslach Burnout Inventory and the Profile of Mood States respectively. Cost savings were projected by an independent consulting firm, which developed an economic impact model.*

Results: *Statistically-significant reductions of multiple burnout and mood dimensions, as well as TMD scores, were noted. Economic-impact analysis projected cost savings of $89,100 for a single typical 100-bed facility, with total annual potential savings to the long-term care industry of $1.46 billion.*

Conclusions: *A cost-effective, 6-session RMM protocol reduces burnout and mood dimensions, as well as TMD, in long-term care workers.*

INTRODUCTION

While the challenges of ensuring quality long-term healthcare are formidable, the impediments to recruitment and retention of healthcare workers in this industry are often considered insurmountable. The result is a spiral of instability; a growing exodus of direct-care staff that leaves behind a workplace which is ever less attractive to potential new staff.[1]

Turnover rates (reported by more than 40 states) for healthcare workers, including certified nurse assistants (CNAs), range between 40% and 100% annually.[1] Coupled with a critical shortage of nurses, ongoing sustainable quality healthcare delivery in a rapidly-aging society is highly threatened.

According to middle series projections, US populations of individuals over the ages of 65 and 85, respectively, are expected to steadily increase from 34.8 to 82 million, and 4.3 to 19.4 million over the next 50 years.[2] A care gap (supply-demand mismatch) is progressively mounting, based upon these data coupled with census predictions for women in the caregiving age (25-54). Currently, the US population includes 1.74 females in the caregiving age per elderly person (the elderly support ratio). By the year 2030, this ratio is expected to drop to 0.92.[1,3]

Furthermore, enrollment in nursing diploma programs and associate degree programs has substantially declined over the last 2 decades,[4] resulting in an aging workforce. The number of individuals passing the National RN licensing exam dropped from 97,679 in 1996 to 74,787 in 2000, a decline of 23%.[4] Average US 2002 turnover rates are estimated at 50% for staff RNs, LPNs, and Directors of Nursing (DONs).[5] For CNAs, turnover is estimated in excess of 71% nationally.[5]

Additional factors including low wages, alternative employment opportunities, the challenge of caring for individuals with complex illnesses or dementia requiring maximum supervision, heavy caseloads, issues related to death and dying, and an epidemic of crippling workplace injuries plague the system.[6-13] Overall impact of excessive turnover extends to consumers and their families in terms of quality, safety and continuity of care, which is often interrupted as elderly patients often do not respond well to change.[1]

Barry Bittman, MD, is a neurologist and medical director of Meadville Medical Center's Mind-Body Wellness Center, Meadville, Pa. Karl T. Bruhn, CEO of Bruhn and Associates, is a retired musician and music products industry executive who now serves as consultant and advisor to the industry and the International Music Products Association. Christine Stevens, MSW, MT-BC, is a music therapist and director of music therapy and wellness for Remo, Inc., Valencia, Ca. James Westengard is a statistician with the Department of Pathology, School of Medicine, Loma Linda University, Loma Linda, Ca. Paul O. Umbach, MA is president and CEO of Tripp Umbach Healthcare Consulting, Inc., Pittsburgh, Pa.

Reimbursement caps based on Medicare and Medicaid funding policies render wage increases based upon supply-demand economics inoperable. Such constraints result in substantial inflexibility of wage scales, and therefore present limited options for improving quality of care based upon workforce stabilization.

Providers (long-term care facilities) ultimately experience significant challenges to economic survival. On September 5, 2000, testimony before the Special Senate Committee on Aging disclosed that approximately 1,600 nursing homes across the country were operating under Chapter 11 bankruptcy.[14,15]

Contrary to the prevalent perspective that most employees respond best to economic incentives, it has been reported that quality working environments, respect, recognition, interpersonal relationships among staff, team spirit, and multi-level support translate into a greater likelihood for the development of a dedicated, sustainable, satisfied workforce.[11,16-21]

While creative stress-reduction initiatives have been acknowledged as necessary elements of a successful organizational culture,[22] limited opportunities exist for stressed long-term care workers to appropriately discuss and deal with multi-level issues affecting psychosocial well-being, stress reduction, coping skills, personal challenges, job satisfaction, and team building. Not surprisingly, negative mood, despondency, hopelessness, and burnout often have great impact on employees and their families, long-term care providers, and recipients of care within an overstressed healthcare delivery system serving the elderly.

"Burnout," is a syndrome comprised of emotional exhaustion (EE), depersonalization (DP), and reduced personal accomplishment (PA) that occur among individuals who work with people in some capacity.[23] Data demonstrate growing numbers of long-term care workers in multiple capacities becoming emotionally exhausted with the subsequent development of undesirable consequences including increased turnover, absenteeism, low morale, and diminished on-the-job performance.[24-26] The increased risk of elder abuse associated with chronic burnout must not be underestimated.

Reported as a continuous rather than a dichotomous variable with varied levels of expression, burnout is not solely limited to direct-care workers; it is also widely experienced by support service staff, managers, and supervisors. In contrast to burnout, engagement with work suggests low emotional exhaustion and depersonalization, coupled with high levels of personal accomplishment.[23]

Negative mood has a major impact on the delivery of quality care. Defined as a conscious state of mind or predominant emotion, mood is typically considered a prevailing attitude predisposing to action. Six extensively studied mood factors include tension/anxiety (T/A), depression/dejection, (D/D), anger/hostility (A/H), vigor/activity (V/A), fatigue/inertia (F/I) and confusion/bewilderment (C/B).[27]

While burnout and negative mood states are prevalent and easily recognized in the stressed long-term care workforce, cost-effective meaningful opportunities for boosting quality of life and job satisfaction are lacking.

Based upon these considerations, our working hypothesis is that a 6-session, cost-effective Recreational Music-making (RMM) protocol results in diminished burnout and Total Mood Disturbance (TMD) in long-term care workers. Burnout is assessed by the Maslach Burnout Inventory (MBI), which measures emotional exhaustion, depersonalization, and personal accomplishment,[23] while TMD is determined by adding all Profile of Mood States (POMS) dimensions (tension/anxiety, depression/dejection, anger/hostility, fatigue/inertia, and confusion/bewilderment), and weighing vigor/activity negatively.[27]

RECREATIONAL MUSIC-MAKING

Substantial research has documented numerous health benefits associated with various strategies that reduce the perception of stress, increase sense of control, and improve mood states. Nurturing/support, camaraderie, verbal and non-verbal self expression, exercise, imagery, and spirituality have considerable bio-psycho-social impact on diverse populations.[28-40] A unique combination of these elements is encompassed by RMM, which has been defined as "enjoyable, accessible, and fulfilling group music-based activities that unite people of all ages regardless of their challenges, backgrounds, ethnicity, ability or prior experience. From exercise, nurturing, social support, bonding, and spirituality to intellectual stimulation, heightened understanding, and enhanced capacity to cope with life's challenges, the benefits of RMM extend far beyond music. RMM ultimately affords unparalleled creative expression that unites our bodies, minds, and spirits."[41] According to the Merriam Webster dictionary, the term recreational is derived from the Latin root, "recreatio," which means "restoration to health."

Group drumming and keyboard interventions have been reported to improve mood states and socialization.[42,43] The RMM program selected for this investigation is based upon Group Empowerment Drumming, a comprehensive multi-faceted protocol with documented effects on cell-mediated biological stress pathways.[44] Coupled with Clavinova keyboard accompaniment and a unique series of Mind-Body Wellness Clavinova Exercises, this protocol-based RMM intervention was designed to establish a relaxed, non-threatening environment for the development of non-music based outcomes as noted in the above RMM definition.[44]

METHODS

Subject Selection and Exclusionary Criteria

A total of 125 subjects (24 men and 101 women) ranging in age from 19 to 78 years (mean 43.8 years) were selected over the course of one year. These subjects were selected from among 375 employees of Wesbury United Methodist Retirement Community (WUMRC), a non-profit continuing care retirement community (CCRC) located in Meadville, Pa. A total of 112 subjects (29.9% of the WUMRC workforce), including 24 men and 88 women ages 19 to 78 (mean 45.3 years), completed the study.

Individuals were randomly selected by the WUMRC administration, and subsequently stratified based upon subject availability (first and second shifts) coupled with the study design, which mandated interdisciplinary representation in each 6-session group. Subjects included 7 RNs, 6 LPNs, 26 CNAs, 6 activities staff, 3 physical/occupational therapists, 3 social services/ministerial staff, 8 dietary workers, 14 housekeeping/laundry workers, 7 maintenance workers, 11 billing/accounting staff, 13 clerical/support staff, and 8 administrators/managers. All subjects were randomly assigned to Group A or Group B (mean 10.6 subjects/group) based upon the crossover design (Table 1). Two groups were held exclusively for 27 administrators, managers, and supervisors.

Subjects who worked the third shift were excluded. Employees whose schedules or vacation/sick time conflicted with scheduling were also eliminated. For the 13 subjects who did not complete the study, reasons include resignation/termination, illness, death of a family member, poor attendance (more than 2 absences), and refusal to participate. Attendance was taken during each session and averaged 5.35 sessions out of 6 for the entire group.

This project was presented to the workers as an employee-enrichment activity with minimal information provided to participants in order to minimize potential expectation effects. Session participation was deemed mandatory by the administration in order to exclude self-selection bias. Only one person actually refused to participate.

All, subjects with the exception of the administrators and managers, completed the MBI and the POMS on-site at 3 data points: immediately prior to the study on day 1, at the end of 6 weeks, and at the end of 12 weeks. Administrators and department managers completed pre- and post-intervention inventories only.

Absolute confidentiality was maintained in order to enhance the validity of subject responses. While names were not used, personal codes were assigned by each subject without divulgence to the research team. In this manner, a subject who did not complete all 3 sets of surveys could be eliminated from the data pool.

EXPERIMENTAL PROTOCOL

During non-intervention periods, subjects continued their normal work routines. Intervention groups, however, met with a trained facilitator at a designated time each week for a total of 6 one-hour consecutive sessions. Facilitators, including a physician, musician and music teacher, followed the HealthRHYTHMS Group Empowerment Drumming Protocol[45] and utilized a series of specially composed Mind-Body Wellness Clavinova exercises. Instruments were specifically chosen to allow individuals without prior music training to feel immediately successful. These included hand drums, SoundShapes, a variety of auxiliary percussion instruments (bells, maracas, etc), and a Clavinova (a state-of-the-art computerized electronic keyboard instrument).

Each session began with a brief welcome, introduction and overview, followed by a 5-minute Mind-Body Wellness exercise played on the Clavinova. Four integral elements including breathing, movement, music, and awareness were emphasized as participants experienced a soothing, multi-dimensional, orchestrated musical score that established a calming acoustic environment for guided imagery, and gentle exercises led by the facilitator. Subjects then participated in an "ice-breaker" activity designed to establish an initial lighthearted sense of teamwork and camaraderie. Shakers (plastic fruit-shaped objects containing sand or gravel) were passed hand-to-hand from individual to individual. As the speed of transfer progressively and rhythmically accelerated to the point at which participants could not maintain the pace, shakers were subsequently dropped and laughter ensued.[44]

Subjects were then asked to select a drum, and the facilitator presented a brief cursory explanation of rudimentary drumming techniques. Rhythmic naming, the process of tapping out the syllables of one's name was then carried out, followed by a short series of entrainment-building exercises used to foster focus, confidence, and group cohesiveness. (Entrainment is a principle of physics that describes the tendency for two oscillating bodies to vibrate in synchrony.) Rather than attempting to learn complex rhythms, subjects then proceeded to play drums and percussion instruments together with Clavinova accompaniment (typically a

TABLE 1 Crossover Design	
Weeks 1-6	Weeks 7-12
Group A Intervention	Group A No Intervention
Group B No Intervention	Group B Intervention

familiar tune) in order to ensure a non-pressured, enjoyable musical experience.

At this stage, approximately halfway through the protocol, subjects were asked to non-verbally express themselves (playing their drums) in direct response to a series of 12 questions (2 questions/session) developed by the authors to inspire deep thought, contemplation, and mutual respect (Table 2). Each subject was subsequently given the option to discuss his or her non-verbal response. Rarely did anyone refuse. Individual comments

TABLE 2 Inspirational Beats (each session included 2 questions presented in the following order)
1. What are you bringing to work today from your personal life and how does it sound?
2. What is one of the unique gifts (not necessarily in your job description) that you bring to this experience?
3. What do you find particularly challenging or stressful about your job or co-workers?
4. What do you find particularly rewarding about your job or co-workers?
5. Can you recall something a co-worker did that was admirable? What was the result and how did it make you feel?
6. What does your own personal pressure sound like, and where does it originate? Can you change its (your) tune?
7. Which resident are you most like, and which resident do you find most inspirational?
8. How did you feel the last time a resident close to you became seriously ill or passed on?
9. Can you share how you felt the last time you were at the end of your rope?
10. What does it feel like when the atmosphere is perfect for you to do your best?
11. Where would you be if you weren't here and why?
12. If you could change anything at work, what would it be?

typically evolved into highly-charged group discussions moderated by the facilitator. During the following week, each person was encouraged to put into practice insights gained from group discussions.

Sessions concluded by repeating the initial Mind-Body Wellness Clavinova exercise and noting or discussing any physical or emotional changes experienced during and after the session.

All subjects signed informed consents, and the protocol was approved by the Institutional Review Board for Human Studies of Meadville Medical Center, Meadville, Pa.

STATISTICAL ANALYSIS
RMM Intervention

Statistical analysis was carried out to test the effect of the RMM protocol on 3 MBI dimensions, 6 POMS dimensions, and a derived TMD score calculated by adding all POMS dimensions, and weighing vigor/activity negatively (8) in the sample of 112 subjects. For parametric statistical comparisons, it was necessary to establish an appropriate common scale (normal deviates) for all burnout/mood dimensions measured, while maintaining the relative magnitudes of the effects induced by the RMM intervention. Therefore, the frequency distribution of the 224 test results from each dimension was checked for significant deviations in shape from a Gaussian distribution (ie, skew and kurtosis). When adjustments were required, the scores were raised to a power (ie, exponent) that transformed the distribution to a more Gaussian shape. Addressing each dimension separately, the now normally-distributed data was subsequently standardized (converted to Z-scores) with a mean of 0 and a standard deviation equal to 1. For each dimension, the differences between the post- and pre- Z-scores was were calculated and summarized by computing their means and standard deviations. Each dimension's mean was then tested for significance against 0, utilizing a 1-tailed paired t-test and charted on a distress-eustress continuum using the same scale. (Figure 1).

An overall eustress effect, counter to the known stress effect, was calculated by taking the mean of all 9 mean Z-score differences (inverting personal accomplishment and vigor/activity), excluding the composite TMD score, and testing for a negative (eustress) difference from 0 using a 1-sample t-test (Figure 1). Since the TMD score is a linear composite of the other POM scores, it was not included in the analysis of an overall eustress effect. It should, however, be considered as a confirmation of the other findings.

To control for any baseline trends over time (6 weeks), a subset of the subject sample (Group B - n=41, Table 1) was repeatedly tested before the RMM intervention. Changes across the 6-week interval for the 9 dimensions were tested using a paired t-test on the transformed

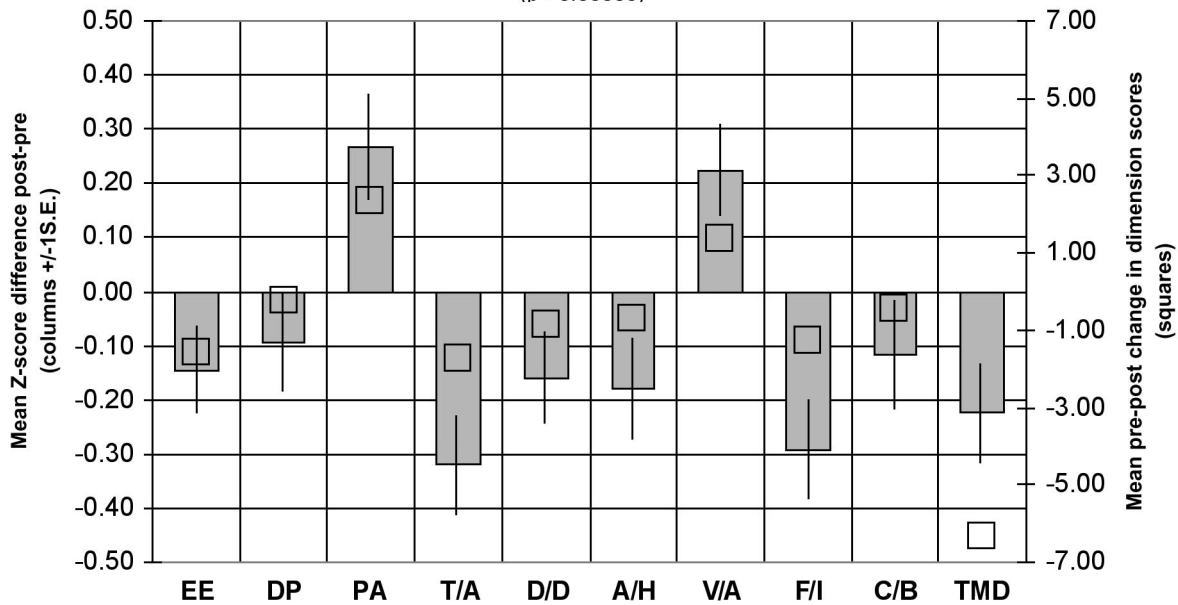FIGURE 1 RMM Effect on MBI and POMS

The Maslach Burnout Inventory (MBI) includes EE – Emotional Exhaustion (p=0.03); DP – Depersonalization (p=0.16); and PA – Personal Accomplishment (p=0.003). The Profile of Mood States (POMS) includes T/A – Tension / Anxiety (p=0.0003); D/D - Depression / Dejection (p=0.03); A/H – Anger / Hostility (p=0.03); V/A – Vigor / Activity (p=0.004); F/I – Fatigue / Inertia (p=0.00001); C/B – Confusion / Bewilderment (p=0.12); and TMD – Total Mood Disturbance (p=0.007). All parameters excluding DP and C/B showed a significant pre-post change (p<0.05). An overall eustress effect was calculated by taking the mean of all 9 mean Z-score differences (inverting PA and VI and excluding TMD as it represents a linear combination of the individual POM scores) and testing for a one-tailed difference from zero as in a one sample t-test (p<0.00005). Test score differences based on unmodified test results are indicated by the squares. n = 112 subjects.

and standardized data, as utilized in testing the pre-post RMM effect (Figure 2).

Additionally, the persistence of the RMM effect was analyzed on a subset of the sample (Group A - n=43, Table 1), where the 9 dimensions were tested once again 6 weeks after completion of the RMM intervention. These data were transformed in a manner similar to the other analysis (Figure 3).

ECONOMIC IMPACT

Cost effectiveness and economic impact were projected by an independent team of economic-impact analysts engaged specifically for these purposes. The economic-impact model was based upon review and analysis of these data in the context of nursing home satisfaction and loyalty studies completed by their firm since 1997 for the Healthcare Advisory Board, the South Carolina Hospital Association, and for Noland Health System, Birmingham, Ala. In addition, the firm reviewed previous studies[46,47] to quantify the relationships between employee satisfaction and turnover rates, as well as industry cost data including the number of annual vacancies due to employee

turnover and the cost of turnover per employee.

Two important variables were identified for consideration in developing the economic impact model. These included satisfaction with non-pay factors accounting for 81.7% of an employee's likelihood to remain loyal to his or her employer[46,47] and, of 12 key variables related to the likelihood to remain employed at a long-term facility more than 3 years, the "connectivity" variable cluster related to co-workers and supervisors was the most significant predictor of loyalty. The 12 key variables identified by the consulting team included ease of communications between the employee and the supervisor, the efforts senior management makes to communicate with employees, respect shown to employees by their supervisors, respect shown to employees by co-workers, likelihood to recommend the employer to a friend or family member, recognition received for doing good work, knowledge of what is expected of the employee, supervisors caring about employees as persons, employee encouragement to make suggestions for improvement, employees' belief that their opinions count, new employees feeling welcomed, and employees having the tools needed to perform required

Group B (Control): Distress Background
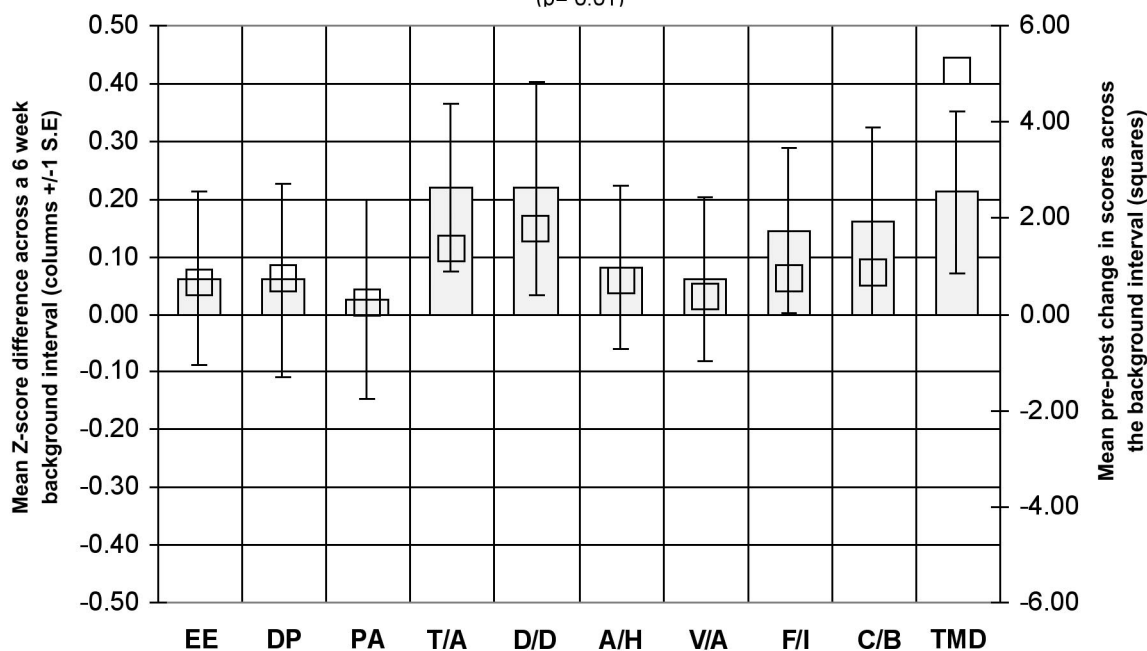### Overall significance of rising distress background
(p= 0.01)

FIGURE 2 Group B (Control): Distress Background

The Maslach Burnout Inventory (MBI) includes EE – Emotional Exhaustion, DP – Depersonalization and PA – Personal Accomplishment. The Profile of Mood States (POMS) includes T/A – Tension / Anxiety, D/D – Depression / Dejection, A/H – Anger / Hostility, V/A – Vigor / Activity, F/I – Fatigue / Inertia, C/B – Confusion / Bewilderment, and TMD – Total Mood Disturbance. To ascertain trends in stress over time (6 weeks), a subset of the subject sample (n=41) was repeatedly tested before the RMM intervention. The average of the mean Z-score differences was -0.095, a negative eustress, indicating a small trend towards distress over time. All of the 9 parameters demonstrated increasing scores (PA and V/A would have been expected to show decreases to indicate a trend toward distress), but none of them were significant individually. The average of the mean Z-score differences demonstrates a significant (p=0.01) multivariate trend towards distress (TMD was not included in the global multivariate test as it represents a linear combination of the individual POM scores). Test score differences based on unmodified test results are indicated by the squares. n = 41.

job functions. The "connectivity" cluster variables include 4 of the 12 factors: ease of communications between the employee and the supervisor, respect shown to employees by their supervisors, respect shown to employees by co-workers, and supervisors caring about employees as persons.[48]

RESULTS
RMM Intervention

For the RMM intervention (n=112), all dimensions: EE (p=0.03); PA (p=0.003); T/A (p=0.0003); D/D (p=0.03); A/H (p=0.03); V/A (p=0.004); F/I (p=0.00001) and TMD (p=0.007), with the exception of DP (p=0.16) and C/B (p=0.12) showed a significant pre-post change (p<0.05) (Figure 1 and Table 3). Of particular note is a 46% reduction for TMD (p=0.007, Table 3). An overall multivariate eustress effect for the data set was determined to be significant (p<0.00005, Figure 1).

Control group data analysis (Group B – 2 data points prior to the RMM intervention) demonstrated a significant multivariate distress trend (p=0.01) that would augment rather than diminish the RMM effect (Table 1, Figure 2). The average of the mean Z-score differences was 0.095, indicating a small non-statistically significant trend towards distress over time. All of the 9 dimensions and the derived TMD score demonstrated increasing scores (PA and V/A would have been expected to show decreases to indicate a trend toward distress). None were determined to be significant individually (Figure 2).

The persistence of the RMM effect was analyzed on a subset of the sample (Group A – n=43), where the 9 dimensions and the derived TMD score were tested once again 6 weeks after completion of the RMM intervention (Figure 3, Table 4). All dimensions: EE (p=0.04); DP (p=0.03); T/A (p=0.003); D/D (p=0.02); A/H (p=0.002); V/A (p=0.05); F/I (p=0.01) and TMD (p=0.01), with the exception of PA (p=0.12) and C/B (p=0.23), showed a significant pre-post change (p<0.05, Figure 3, Table 4). The average of the Z-score differences (TMD was not included in the global multivariate test, as it represents a linear

Group A - Persistent RMM Effect
Overall significance of eustress at follow-up
(p < 0.00001)
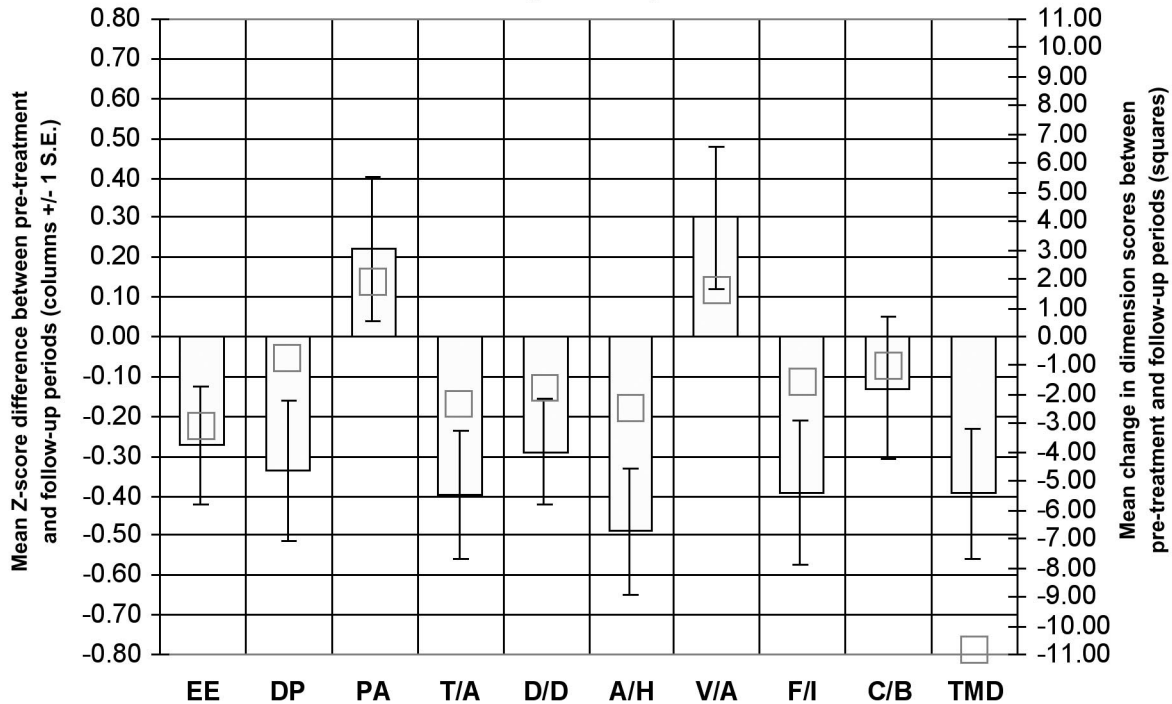

FIGURE 3 Group A - Persistent RMM Effect

The Maslach Burnout Inventory (MBI) includes EE – Emotional Exhaustion (p=0.04); DP – Depersonalization (p=0.03); and PA – Personal Accomplishment (p=0.12). The Profile of Mood States (POMS) includes T/A – Tension / Anxiety (p=0.003); D/D – Depression / Dejection (p=0.02); A/H – Anger / Hostility(p=0.002); V/A – Vigor / Activity (p=0.05); F/I – Fatigue / Inertia (p=0.01); C/B – Confusion / Bewilderment (p=0.23); and TMD – Total Mood Disturbance (p=0.01). The persistence of the RMM effect was analyzed on a subset of the sample (Group A – n=43) where the 9 dimensions were tested once again 6 weeks after completion of the RMM intervention. All parameters excluding PA and C/B showed a significant pre-post change (p<0.05). The average of the Z-score differences was 0.315 (p=9.92E-06), indicating a significant RMM eustress effect 6 weeks after completion of the intervention (TMD was not included in the global multivariate test as it represents a linear combination of the individual POM scores). This sample (n = 43) demonstrated an overall eustress effect even more significant (p<0.00001) than pre-post effect for the full sample (n=112). Test score differences based on unmodified test results are indicated by the squares.

combination of the individual POM scores) was 0.315 (p=0.00001), indicating a significant augmentation of the RMM effect 6 weeks after completion of the intervention. The overall multivariate eustress effect was even more significant than the pre-post effect for the full sample (Figure 3, Table 4). In addition, the persistence of the TMD score represents a 62.3% reduction from baseline (p=0.01, Table 4).

ECONOMIC IMPACT

The connectivity cluster variable scores identified previously by the consultants were significantly correlated with long-term care workers who remained employed more than 3 years (r=0.83574, p=0.05).48 Resultant improvements of TMD scores associated with this RMM intervention were subsequently correlated with these connectivity cluster variable scores (r=0.78923, p=0.05).

Assuming the average 100 bed long-term care facility experiences a loss of 60 staff positions annually, with 18.3% of these vacancies (11 workers) occurring for purely economic reasons , an average of 49 long-term care workers at each facility leave their jobs each year for non-financial reasons. Based upon the TMD score improvement, post-intervention (46% – Table 3), the consultants projected a similar percentage increase in connectivity cluster variable scores among long-term care workers for their data collected in 2001 at Noland Health System (n=464).[48] Since connectivity cluster variable scores have been determined to account for 50% of 3-year retention, the consultants projected that 11 (50% x 46% x 49) of the 49 long-term care workers likely to leave for non-economic reasons may be influenced to stay an additional year due to increases in connectivity as a result of the RMM intervention.

The typical 100 bed long-term care facility would therefore expect to experience an 18.3% overall reduction of employee turnover through the implementation of this RMM program, resulting in 11 positions saved out of every 60 positions predicted to be lost each year.

With a cost per turnover of $8,100,[49] the cost of 60 lost positions equals $486,000 annually. The retention of 11 employees each year at the typical 100-bed facility would therefore result in an average cost savings of $89,100 per year.

From a national perspective, employee turnover at long-term care facilities costs the industry $7.96 billion annually, based upon a turnover rate of 60% for all classes of long-term care workers.[48] Total annual savings to the industry based on an 18.3% decrease in turnover at every long-term care facility is therefore projected at $1.46 billion.

With an estimated cost of this RMM program of approximately $1,471 per year (instruments and training = $10,300 amortized over 7 years), the return on investment is calculated at $60.57 saved for every dollar invested.

DISCUSSION

As demonstrated in the prior section, this randomized crossover controlled RMM intervention for long-term healthcare workers revealed statistically significant improvements for multiple parameters associated with burnout, mood states, and TMD. Multivariate eustress trends coupled with marked TMD score reductions support the underlying hypothesis. Findings based upon pre- and post-differences associated with the experimental intervention, coupled with data demonstrating a persistent effect 6 weeks post-intervention and a control trend toward distress, reveal correlations that warrant further consideration.

Comparing our baseline burnout data with findings from a recent study of 172 nursing home caregivers (nurses and physicians) in Italy, the WUMRC workers manifested higher mean levels of EE and DP, coupled with lower levels of PA (WUMRC/Italy − EE = 16.10/15.0; DP = 4.58/4.0; PA = 36.46/38.0).[50] While multiple factors including cultural issues may explain these differences, the inclusion of physicians in the Italian cohort must be considered a distinguishing factor.

The potential impact of these RMM findings should be considered in the context of the unique intervention, the representative interdisciplinary subject sample, and the experimental design.

The use of rhythm-based events[51] in a variety of government, healthcare, community and corporate settings, meetings, and retreats is expanding.[51-53] Weekly employee drum circles are now being held by leading Fortune 500 companies that are firmly committed to team-building and employee satisfaction.[51-53] The utilization of rhythm-based protocols in these settings has resulted in a substan-

tial reduction of personal barriers that impede optimal communications, creativity, and team-building.

Group drumming has been demonstrated to be easily learned in a non-pressured manner. Based upon techniques that build upon entrainment, modulation, call and response, and self-expression, rhythm-based sessions expand opportunities for expressing and dealing with the pressures and stresses of daily living.[41,45,53] The defining philosophy of a successful group-drumming intervention emphasizes support and personal/group expression, rather than mastery.[45] However, this composite protocol, in comparison to other drum circles, was unique as participants literally tapped their drums to familiar tunes played on the Clavinova, rather than learning or playing along with the facilitator. Mind-Body Wellness Clavinova exercises and a host of familiar songs were utilized as an integral part of the program to ensure a relaxed, accompaniment upon which individual/group expression and improvisation progressively evolved.

A principal shortcoming of most published studies in long-term care is based upon the approach of offering strategies exclusively for individuals within a specific field, such as nursing, based in part on funding considerations. This interdisciplinary RMM intervention, however, was conducted with a precise focus on many of the perceived needs of a wide-ranging spectrum of long-term healthcare workers. It ensured an engaging, affirmative, relaxing, and safe environment for enhancing communication and building a collaborative culture within and across disciplines.[54] Interdisciplinary respect, recognition, and organizational commitment,[16] factors previously deemed critical to employee satisfaction, were emphasized during all sessions.

The results of this investigation clearly support the contention that dissatisfaction, often prevalent among staff, mandates the need to develop effective coping strategies and early preventive measures.[55,56] These data also concur with published reports suggesting that higher levels of personal respect are associated with lower levels of EE (one dimension of burnout), while personal support reduces occupational stress, anxiety, and depression.[57] The relevance of this approach should be considered with the awareness that personal support both from peers and supervisors has been shown to be effective in protecting against many of the consequences of life stress on health.[57]

As facilitators reiterated that confidentiality was to be extended to all session discussions, valuable insights often revealing rather sensitive personal and work-related issues progressively evolved. Participants, in many cases for the first time, recognized similar challenges and frustrations as well as opportunities to discover and appreciate respective contributions in order to create a more enjoyable and supportive working environment. Homework assignments

Dimensions (n = 112)	Pre mean (SD)		Post mean (SD)		% Change
TABLE 3 RMM Effect on MBI and POMS Pre-Post Intervention					
MBI					
Emotional Exhaustion (EE)	16.1	(10.8)	14.5	(11.1)	-9.9%
Depersonalization (DP)	4.6	(4.9)	4.4	(5.0)	-4.3%
Personal Accomplishment (PA)	36.5	(8.9)	38.8	(7.1)	+6.3%
POMS					
Tension/Anxiety (T/A)	8.2	(5.8)	6.5	(5.4)	-20.7%
Depression/Dejection (D/D)	6.8	(6.5)	6.0	(6.7)	-11.8%
Anger/Hostility (A/H)	6.6	(6.0)	5.9	(6.8)	-10.6%
Vigor/Activity (V/A)	20.4	(5.8)	21.7	(6.2)	+6.4%
Fatigue/Inertia (F/I)	7.0	(5.4)	5.8	(5.4)	-17.1%
Confusion/Bewilderment (C/B)	5.4	(4.1)	5.0	(3.9)	-7.4%
Total Mood Disturbance (TMD)	13.7	(27.2)	7.4	(29.2)	-46.0%

focusing on empowering each participant to put into practice insights presented during sessions served to establish continuity, while encouraging ongoing opportunities for growth and team-building between sessions.

It must be emphasized that this RMM protocol represented a substantial cultural shift that was met with various levels of initial skepticism and resistance in an environment where similar programs do not exist. At one point during the study, when resistance to allowing employees to leave their posts was expressed directly and indirectly by various unit managers and supervisors, the WUMRC administration enabled the performance of the protocol exclusively for two interdisciplinary supervisor/manager groups. This strategy immediately served to reinforce institutional support and cooperation, while reducing resistance to participation.

From a national perspective, employee turnover at long-term care facilities costs the industry $7.96 billion annually based upon a turnover rate of 60% for all classes of long-term care workers.[48] According to financial data provided by the American Health Care Association,[5] the typical long-term care facility spends 6.9% of its total annual operating budget on costs related to employee turnover (approximately 20% of all payroll-related expenses), including employee recruitment, training, and other administrative costs associated with securing new employees.

It should be emphasized that the consultants used TMD score improvements immediately post-intervention (46% – Table 3) rather than 6-week post-intervention TMD score improvements (62.3% – Table 4) to project economic impact. Based upon this more conservative analysis, $89,100 of $486,000 spent annually on employee turnover could be saved and more effectively utilized by each typical 100-bed facility, retaining 11 more workers each year by instituting this RMM intervention.

With a total potential industry savings of $1.46 billion annually and $60.57 dollars saved for every dollar invested, the projected economic impact of this RMM strategy warrants further consideration and validation.

The authors recognize a number of important limitations that must be considered in the context of this early foundational assessment of the benefits of this unique RMM strategy. It must be emphasized that the specificity of the RMM components used in this protocol are considered essential for the established outcomes. Caution is advised against generalizing similar conclusions for other approaches.

While anonymity is likely to yield more honest survey responses, and interdisciplinary representation serves to increase the relevance and applicability in long-term care environments, one cannot draw conclusions based exclusively upon any particular employee population. In addition, to further ensure confidentiality and trust, data documenting personal factors such as socioeconomic challenges, underlying depression, or medication/alcohol use was not collected. While one could argue that this RMM intervention preferentially affected only a specific group or groups, the authors find this extremely unlikely as facilitators, managers, and administrators acknowledged a prevalent generalized baseline of distress across disciplines. As the program evolved, numerous program-inspired, affective, and work-related improvements were noted throughout the entire spectrum of employees.

The gamut of anger, frustration, and despondency was voiced by all classifications of employees during sessions. This is not surprising since published data demon-

Dimensions (n = 43)	Pre mean (SD)	Post mean (SD)	% Change
MBI			
Emotional Exhaustion (EE)	16.3 (10.0)	13.2 (12.4)	-19.0%
Depersonalization (DP)	5.0 (4.5)	4.2 (5.6)	-16.0%
Personal Accomplishment (PA)	35.0 (9.8)	36.8 (9.8)	+5.1%
POMS			
Tension/Anxiety (T/A)	9.2 (6.0)	6.9 (5.5)	-25.0%
Depression/Dejection (D/D)	7.8 (6.6)	6.1 (6.7)	-21.8%
Anger/Hostility (A/H)	8.1 (6.0)	5.6 (6.6)	-30.9%
Vigor/Activity (V/A)	20.4 (4.7)	22.0 (5.9)	+7.8%
Fatigue/Inertia (F/I)	7.2 (5.0)	5.6 (5.5)	-22.2%
Confusion/Bewilderment (C/B)	5.6 (4.4)	4.6 (3.0)	-17.9%
Total Mood Disturbance (TMD)	17.5 (26.9)	6.6 (27.4)	-62.3%

TABLE 4 RMM Persistent Effect on MBI and POMS
Baseline to 6 Weeks Post Intervention

strate that activity workers actually perceive higher psychological demands than RNs and CNAs, and greater job strain than RNs, while significant numbers of physical therapists and occupational therapists feel emotionally overextended and exhausted, and maintain negative attitudes toward their work.[58,59] High levels of perceived stress were frequently experienced by the majority of workers including managers and administrators. The decision to ensure trust through anonymity, rather than attempting to collect additional individual data, outweighed the potential benefits of disclosure.

Facilitator training and group leadership experience must also be considered significant limiting factors. To eliminate bias effects induced by a specific facilitator, one of three trained individuals (a physician, musician, and music teacher) led each session. All 6 consecutive sessions were never facilitated by the same individual.

Each facilitator had been engaged in extensive supervised protocol training prior to initiation of the study. Facilitators were not professional drummers, and actual drumming experience was not considered an important predictor of success. Disparities in group leadership experience and training, however, may be considered critical impediments to successful ongoing replication.

Employee "buy in" must also be addressed in the future practical application of this strategy. The WUMRC administration provided only a cursory overview of the program to its employees in order to reduce anticipatory effects in accordance with the study design. Actively promoting the principles of this strategy and beginning with an interdisciplinary group of unit leaders and supervisors could potentially enhance overall benefits in future studies.

This investigation does not elucidate the impact of specific elements within the multi-component protocol. Rather than testing this approach against another paradigm that would have removed employees from their posts for an additional 6 hours each, the authors instead presented the protocol in a real-world environment where a similar intervention had not been established as a fundamental component of the employee work week. While it might be assumed that only the attention paid to the participants or the actual discussion component impacted the subjects, such a conclusion is unlikely based upon the power of the actual music-making component to foster open, honest, relaxed expression and sharing among individuals who were not likely to express themselves effectively otherwise. Additional investigations comparing various protocols are warranted to generate further insights and conclusions.

Future studies will be performed in a host of long-term care settings (both urban and rural), utilizing large employee sample sizes. The cultural needs of the workers must be carefully addressed in the development and execution of similar initiatives. Offering the program to each employee on an annual basis, with additional sessions available during lunch or breaks, could potentially further improve overall outcomes.

Long-term follow-up with ongoing scrutiny of actual retention data is warranted to determine the extent of enduring effects and to validate the predicted economic impact.

CONCLUSIONS

The prospect of maintaining, stabilizing, and ultimately ensuring the sustainability of quality long-term care in our nation is in great jeopardy. While the chal-

lenges of reducing burnout and improving mood states in long-term care workers present a daunting task, the potential benefits to long-term care centers, employees, recipients of care, and their families are immense. This extraordinary threat to an already overburdened system must not be underestimated, nor should the valued workers entrusted with long-term care be ignored.

Fostering personal growth and empowerment by encouraging employees to process their experiences through co-worker support groups and team-building activities serves to enhance one's sense of personal value and career commitment.[11,60-62] Offering an affordable, effective, interdisciplinary RMM program that encourages communication reduces elements of burnout and improves mood states among employees. It also has considerable potential for creating a satisfied, effective workforce that is more readily engaged and committed to working together in an arena that represents one of the most challenging areas of societal need. This unique interdisciplinary process should be considered an integral team-building strategy for progressively building a critical foundation of sustainable organizational culture.

Developing meaningful and effective working relationships by offering opportunities to express the music deep within serves as a catalyst for developing and strengthening a needed sense of camaraderie, acceptance, respect, and support in challenging times. The resultant open and constructive articulation of one's needs and feelings with fellow workers is likely to result in substantive individual and economic benefits that may ultimately play a key role in the future viability of quality long-term care.

While factors including wage scales, staffing, socioeconomic issues, and healthcare reimbursement policies clearly impact the successful delivery of quality long-term healthcare for industrialized nations throughout the world, the potential for reducing or preventing burnout while improving mood states among long-term healthcare employees must be considered cost-effective, critical life-enhancement goals deserving of further attention and research.

References

1. Dawson S, Seavey D, Frank B, Van Keunen A, Wilner M. *Direct Care Health Workers: The Unnecessary Crisis in Long-term Care*. New York, NY: The Aspen Institute; 2001:1-30.
2. US Census Bureau. 2000-2050: Population projections of the United States by age, sex, race, Hispanic origin, and nativity. 2002. Available at: http://www.census.gov/population/www/projections/natproj.html. Accessed May 30, 2002.
3. US Census Bureau. National population projections I: Summary files total population by age, sex, race, and Hispanic origin. 2002. Available at: http://www.census.gov/population/www/projections/natsum-T3.html. Accessed May 30, 2002.
4. US General Accounting Office. Nursing workforce: emerging nurse shortages due to multiple factors. GAO-01-944. US General Accounting Office. Washington, D.C. 2001. Available at: http://www.visalaw.com/docs/nurses.pdf. Accessed May 30, 2002.
5. American Health Care Association Health Services Research and Evaluation. Results of the 2002 AHCA survey of nursing staff vacancy and turnover in nursing homes. 2002. Available at: http://www.ahca.org/research/rpt_vts2002_final.pdf. Accessed May 30, 2002.
6. Service Employees International Union (SEIU), AFL-CIO, CLC. *Caring Till It Hurts: How Nursing Home Work Is Becoming the Most Dangerous Job in America*. Second Edition. 1997.
7. Novak M, Chapell N. Nursing assistant burnout and the cognitively impaired elderly. *Intl J Aging and Human Dev*. 1994;39(2):105-120.
8. Fitzpatrick P. Turnover of certified nursing assistants: a major problem in long-term care facilities. *Hospital Topics*. 2002;80(2):21-25.
9. Robertson JF, Cummings CC. Attracting nurses to long-term care. *J Gerontol Nurs*. 1996;22(9):25-32.
10. Robertson JF, Herth KA, Cummings CC. Long-term care: retention of nurses. *J Gerontol Nurs*. 1994;20(11):4-10.
11. Robertson JF, Cummings CC. Attracting nurses to long-term care. *J Gerontol Nurs*. 1996;22(9):25-32.
12. O'Neil E, Seago JA. Meeting the challenge of nursing and the nation's health. *JAMA*. 2002;288(16):2040-2041.
13. Newman K, Maylor U, Chansarkar B. The nurse satisfaction service, quality and nurse retention chain: Implications for management of recruitment and retention. *J Mgmt Med*. 2002;16(4):271-291.
14. Pelovitz S. Testimony on nursing home bankruptcies before the Senate Special Committee on Aging. Health Care Financing Administration, US Department of Health and Human Services. September 5, 2000. Available at: http://www.hhs.gov/asl/testify/t000905a.html. Accessed May 30, 2002.
15. Edelman T. Nursing home bankruptcies: what caused them? Hearing before the special committee on aging. Center for Medicare Advocacy, Inc. September 5, 2000. Available at: http://www.medicareadvocacy.org/Archived%20Pages/nursing%20home%20bankruptcies%20-%20center.htm. Accessed May 30, 2002.
16. McGuire M, Houser J, Jarrar T, Moy M, Wall M. Retention: it's all about respect. *Health Care Mgr*. 2003;22(1):38-44.
17. Robertson JF, Herth KA, Cummings CC. Long-term care: retention of nurses. *J Gerontol Nurs*. 1994;20(11):4-10.
18. Aiken LH, Clarke SP, Sloane DM, Sochalski J, Silber JH. Hospital nurse staffing and patient mortality, nurse burnout, and job dissatisfaction. *JAMA*. 2002;288(16):1987-1993.
19. Mesirow KM, Klopp A, Olson L. Improving certified nurse aide retention: a long-term care management challenge. *J Nurs Admin*. 1998;28(3):56-60.
20. Jackson D, Mannix J, Daly J. Retaining a viable workforce: a critical challenge for nursing. *Contemp Nurse*. 2001;11(2-3):163-172.
21. Chou SC, Boldy DP, Lee AH. Staff satisfaction and its components in residential aged care. *J Qual Health Care*. 2002;14(3):207-217.
22. Rhoades FB. Burnout: An Organizational Response. *J Long-term Care Admin*. 1990;18(3):15-17.
23. Maslach C, Jackson SE, Leiter M. *Maslach Burnout Inventory Manual*. Palo Alto, Calif: Consulting Psychologists Press; 1996.
24. Evers W, Welko T, Brouwers A. Aggressive behavior and burnout among staff of homes for the elderly. *Intl J Mental Health Nurs*. 2002;11:2-9.
25. Severinsson E. Moral stress and burnout: qualitative content analysis. *Nurs Health Sci*. 2003;5:59-66.
26. Hall L. Burnout: Results of an empirical study of New Zealand nurses. *Contemp Nurse*. 2001;11(1):71-83.
27. McNair M, Lorr M, Droppleman L. *Profile of Mood States Manual*. San Diego, Calif: EdITS/Educational and Industrial Testing Service; 1992.
28. Visintainer MA, Volpicelli JR, Seligman MEP. Tumor rejection in rats after inescapable or escapable shock. *Science*. 1982;216:437-439.
29. Cohen S, Doyle WJ, Skoner DP. Social ties and susceptibility to the common cold. *JAMA*. 1997;277(24):1940-44.
30. Domar A, Dreher H. Distress and conception in infertile women: a complementary approach. *Journal of the American Medical Women's Assoc*. 1999;54(4):196-198.
31. Fawzy FI, Fawzy NW, Hyn CS, et al. Malignant melanoma: effects of an early structured psychiatric intervention, coping, and affective state on recurrence and survival six years later. *Arch Gen Psych*. 1993;50:681-689.
32. Blumenthal JA, Jiang W, Babyak M. Stress management and exercise training in cardiac patients with myocardial ischemia: effects on prognosis and evaluation of mechanisms. *Arch Intern Med*. 1997;157:2213–2223.
33. Seeman, TE, Syme SL. Social networks and coronary artery disease: A comparative analysis of network structural and support characteristics. *Psychosom Med*. 1987;49:341-354.
34. Medalie JH, Goldbourt U. Angina pectoris among 10,000 men II: Psychosocial and other risk factors as evidenced by a multivariate analysis of a five year incidence study. *Am J Med*. 1976;60(6):910-921.
35. Williams RB, Barefoot JC, Califf RM. Prognostic importance of social and economic

resources among medically treated patients with angiographically documented coronary artery disease. *JAMA*. 1992;267:520-24.

36. Russek LG, Schwartz GE, Bell IR, Baldwin CM. Positive perceptions of parental caring are associated with reduced psychiatric and somatic symptoms. *Psychosom Med*. 1997;59(2):144-49.

37. Hakim AA, Petrovitch H, Burchfield CM. Effects of walking on mortality among non-smoking retired men. *N Engl J Med*. 1998;338:94-99.

38. Hu FB, Stampfer MJ, Colditz GA, et al. Physical activity and risk of stroke in women. *JAMA*. 2000; 283:2961-2967.

39. Thune I, Brenn T, Lund E, Gaard M. Physical activity and the risk of breast cancer. *N Engl J Med*. 1997;336(18):1269-1275.

40. Koenig H. *The Healing Power of Faith: Science Explores Medicine's Last Great Frontier*. New York, NY: Simon & Schuster;1999.

41. Bittman B. Music-making: an integrative strategy for managing chronic pain. *The Pain Practitioner*. 2001;11(1):2-11.

42. Burt JW. Distant thunder: drumming with Vietnam veterans. *Music Therapy Perspectives*. 1995;13:110-112.

43. Bittman B. Take two music lessons in the golden years: and call me in the morning. *Texas Bandmasters Association Journal*. 2001;2:2 10.

44. Bittman B, Berk L, Felten D, et al. Composite effects of group drumming music therapy on modulation of neuroendocrine-immune parameters in normal subjects. *Altern Ther Health Med*. 2001;7(1):38-47.

45. Bittman B, Stevens C, Bruhn KT. *Group Empowerment Drumming*. Remo Inc: Valencia, Calif;2001.

46. Smith HL, Watkins LE. Managing manpower turnover costs. *Personnel Administration*. 1978;23: 6-10.

47. Hinrichs JR. *Highlights of the Literature #17: Controlling Absenteeism and Turnover* (Work in American Institute Studies in Productivity Series). Scarsdale, NY: Work in America Institute, Inc; 1980.

48. Tripp Umbach Healthcare. *Assessing the Satisfaction and Loyalty of Employees at Noland Health System Facilities*. Birmingham, Ala; 2001 (not published).

49. Advantage Hiring. Calculating the Cost of early Employee Turnover. 2001. Available at: http://www.advantagehiring.com/calculators/fs_hfcalcs.htm. Accessed May 30, 2002.

50. Cocco E, Gatti M, Lima CA, Camus V. A comparative study of stress and burnout among staff caregivers in nursing homes and acute geriatric wards. *International Journal of Geriatric Psychiatry*. 2003;18:78-85.

51. Hull A. *Drum Circle Spirit: Facilitating Human Potential Through Rhythm*. White Cliffs Media. Reno, NV,1998.

52. Stevens C. Drum Circles at Toyota. Remo website. 2003. Available at: http://www.remo.com/drumcircles/index.cfm?ObjectID=82. Accessed May 30, 2002.

53. Stevens C. *The Art and Heart of Drum Circles*. Milwaukee, Wis: Hal Leonard Corporation; 2003.

54. Aiken L, Anderson R, Buerhaus P, et al. The joint commission: strategies for addressing the evolving nursing crisis. *Joint Commission Journal on Quality and Safety*. 2003;29:1 41-50.

55. Matrunola P. Is there a relationship between job satisfaction and absenteeism? *J Adv Nurs*. 1996;23:827-834.

56. Kalliath T, Morris R. Job satisfaction among nurses. *J Nurs Adm*. 2002;32(12):648-654.

57. Firth H, McIntree J, McKeown P, Britten P. Interpersonal support amongst nurses at work. *J Adv Nurs*. 1986;11:273-282.

58. Morgan DG, Semchuk KM, Stewart NJ, D'Arcy C. Job strain among staff of rural nursing homes. *J Nurs Adm*. 2002;32(3):152-161.

59. Balogun JA, Titiloye V, Balogun A, Oyeyemi A, Katz J. Prevalence and determinants of burnout among physical and occupational therapists. *J Allied Health*. 2002;31(3):131-139.

60. Drebing C, McCarty E, Emerson-Lombardo N. Professional caregivers for patients with dementia: predictors of job and career commitment. *American Journal of Alzheimer's Disease and Other Dementias*. 2002;17(6):357-362.

61. Moyle W, Skinner J, Rowe G, Gork C. Views of job satisfaction and dissatisfaction in Australian long-term care. *Journal of Clinical Nursing*. 2003;12(2):168-176.

62. Hyman RB. Evaluation of an intervention for staff in a long-term care facility using a retrospective pretest design. *Evaluation & the Health Professions*. 1993;16(2):212-224.