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Donna M Zucker, *University of Massachusetts - Amherst*



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Labyrinth Walking in Corrections

Donna M. Zucker, RN, PhD, FAAN and Amy Sharma, RN, BS, BA

School of Nursing, University of Massachusetts, Amherst, Amherst, Massachusetts, USA

A 6 week labyrinth walking program was pilot tested in a correctional setting and goals were to: 1) determine the feasibility of a labyrinth walking curriculum; 2) pilot test measures of health related quality of life (QOL) (pre and post-surveys) and blood pressure; and 3) examine the influence of relationship-centered teaching on subject satisfaction. Relational communication was used as a framework for this study, emphasizing concepts of trust, competency and similarly in the teacher. A pretest/posttest descriptive design was used. The sample was 14 offenders at a Massachusetts county jail. The intervention included six 90 minute sessions, composed of a lecture, a labyrinth walk, and journal writing. Measures included a demographic survey; pre and post session walk blood pressures; pre and post program QOL measures; and a post program measure of satisfaction. The sample was 57% Caucasian, 36% Hispanic, and 7% African American, with an average age of 34, mostly high school educated and single. Drug of choice was alcohol with age of use at 12 and 1/2 years. Seventy-nine percent were previously incarcerated more than twice. QOL data were not changed pre to post. BP data trended in a healthy direction from weeks 1 to 6. Satisfaction with the teacher and the program was high. The labyrinth walking pilot program was proven feasible, low cost and satisfying for the participants. Recommendations for future studies are discussed.

Keywords labyrinth walking, correctional health, stress reduction, behavioral change

INTRODUCTION

Sixty-five percent of prison inmates meet the DSM IV medical criteria for substance abuse or addiction (The National Center on Addiction and Substance Abuse, 2010). Nationwide, the number of people in state prisons for drug offenses has increased 550% over the last 20 years (Justice Policy Institute, 2009). Data suggests that rearrest for incarcerates who undergo

substance abuse treatment is 50% less than for those who do not (Kunitz et al., 2002). Common life skills programs focus on GED completion, communicable disease prevention, substance abuse prevention, and anger management. Even in situations in which treatment programs have proven effective, they are often underused in the correctional setting. Therefore with average sentences of less than 18 months, an optimal window of opportunity exists for county correctional facilities to impact rates of rearrest by expanding substance abuse treatment services. One such service is a labyrinth walking curriculum.

A review of the contemporary literature has shown that labyrinth walking is of therapeutic value for nursing home clients (Carnes, 2001), for clients in psychiatric facilities and as therapeutic for some psychiatric illness (LaTorre, 2004; Sandor, 2005), and for hospice families and clients (Richardson, 2007). Labyrinth walking is a form of mindfulness meditation and is viewed by some as a tool to help improve quality of life (QOL), with applicability in a wide array of areas. The links between mindfulness, spirituality and health are generally well known (Seeman, Dubin, & Seman, 2003), and spirituality has the potential to influence the effects of stress on substance abuse treatment outcomes and relapse (Arevalo, Prado, & Amaro, 2008). Evaluations of successful substance abuse treatment programs that include meditation have indicated a decrease in crime and recidivism (Himelstein, 2010; Samuelson, Carmody, Kabat-Zinn, & Bratt, 2007).

The purpose of this project was to pilot test a labyrinth walking curriculum in a county correctional setting. The project incorporated the current research regarding walking meditation into an experience-based treatment intervention. Researchers collected both qualitative and quantitative data for a 6 week labyrinth walking curriculum designed to: 1) determine the feasibility of a labyrinth walking curriculum in a correctional setting; 2) pilot test measures of QOL (pretest and posttest surveys) and blood pressure; and 3) examine the influence of relationship-centered teaching on participant satisfaction.

Background

The 2003 National Survey on Drug Use and Health ranks New England as the region highest in current, past year, and heavy alcohol use, as well as the region highest in current and

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Address correspondence to Donna M. Zucker, RN, PhD, FAAN, School of Nursing, University of Massachusetts, Amherst, 128 Skinner Hall, 651 No. Pleasant Street, Amherst, MA 01003. E-mail: donna@acad.umass.edu

past year illicit drug use (SAMHSA, 2008). This epidemic health problem is equally reflected in county jail and state prison populations, due to the strong link between substance abuse and incarceration. Overall, 3 year recidivism rates for males incarcerated in Massachusetts dropped from approximately 44% in 1995 and 1996 to approximately 39% for the subsequent years through 2002 (Kohl, Matthews Hoover, McDonald, & Solomon, 2008). However, a lack of education, marketable skills, and stable support systems confound ex-offenders' success once released from prison, and can lead to increased recidivism (Tiburcio, 2008).

Meditation and Mindfulness

Reducing recidivism for substance abuse is the priority goal for offenders and is much more likely to result from attending meaningful treatment programs. Mindfulness meditation programs are rooted in Buddhist Vipassana meditation and include a strong component of insight and moment to moment awareness. As such the individual notices the thoughts that arise in the mind without judging them (Hsu, Phillips, Sherman, Hawkes, & Cherkin, 2008). Indian prisons have had success with incorporating Vipassana into prison reform programs, but the literature of its usefulness in U.S. prisons is sparse. As of 2003, only a few correctional facilities in the United States have opened their doors to Vipassana with some modest successes in recidivism 3 months after release (Parks et al., 2003). Vipassana and labyrinth walking share a common focus on moment to moment awareness during the meditation. The former is practiced in silence while seated and the latter incorporates walking into the meditation.

Offenders require innovative treatment programs to encourage success in changing their addictive behaviors once released. Because of the subjective experience of meditation and relaxation on stress reduction responses, it is difficult to quantify absolute outcomes of engaging in meditation practices. Benefits of meditation may include reducing depression and anxiety, promoting abstinence from intoxicating substances, and reducing self-harm behaviors (Dakwar & Levin, 2009). Not all meditation practices will have the same impact on everyone so generalizability is difficult.

Labyrinth Walking

Labyrinths are ancient forms of pilgrimage and their contemporary use spans health care, education and rehabilitation settings. Labyrinth walking integrates cognitive and structured, physical exercises in the form of walking meditation. It has been known to assist in self-regulation, thus decreasing impulse control, problems interpreting social cues, and poor organization thus enhancing QOL (DeBellis 2001; Teicher, Andersen, Polcari, Andersen, & Navalta, 2002). Labyrinth walking is a purposeful walking meditation. Participants engage in this activity by walking a purposefully designed path at their own pace, either on the ground outdoors, or on a mat indoors (24 or 40 feet in diameter). See a typical labyrinth design in



FIGURE 1. The 11-circuit labyrinth as seen at Chartres Cathedral Source: (www.crystalinks.com/labyrinths.html)

Figure 1. The shape of the labyrinth is a variation on a series of circular turns that lead to the center. The entrance is the exit and an entire walk from beginning to end takes about 20 minutes. Preparation for the walk is similar to preparing for any meditation and requires very little instruction. To begin the walk one often removes their shoes, calms the mind, and slows their breathing. For many this is a spiritual journey so walkers are asked to enter the labyrinth and let pressures of the moment go. When reaching the center it is time to pause and reflect on the journey. On the return it is a time to focus on what the walkers bring out of the labyrinth and back into their lives.

For over a decade, holistic nurses have described various dimensions of the usefulness of labyrinth walking. Labyrinth walking has been explored as having relevance in reducing stress in clinical psychology (Sholem, 2000). Yang (2004) described the need for alternate forms of stress reduction, such as labyrinth walking for nurses who work in obstetrical cancer nursing settings (Zielinski, 2004). One study quantified physiological responses to labyrinth walking (Sandor & Froman, 2006). The goals were to measure physiological (blood pressure, heart rate, and respiration) as well as affective (positive and negative affect) responses in 25 community members. In this study the systolic and diastolic blood pressures showed essentially no effect size (ES) differences. They did report ES differences for positive and negative affect. Limitations included a single walk only, and a lack of preparing walkers prior to the study.

Positive results have been seen in labyrinth walkers, who claim it helps them relax, focus, and gain new insight into old problems (Woodside, 2004). Businesses are using labyrinth walking for brainstorming and creative problem solving.

Prisons are using labyrinths as tools to help prisoners cope with the stress of incarceration. Because of the enormous stress related to incarceration this study measured blood pressure and QOL before and after instituting a labyrinth walking curriculum with offenders in a county correctional setting.

Labyrinths Education in the Correctional Setting

Villemaire (2008) has developed a substantial curriculum on labyrinth walking as a cognitive and kinesthetic activity meant to enrich the mind, body, and spirit of community offenders. This curriculum follows from the seminal work by Artress (1995; 2006) and program goals have been tailored to the correctional setting. Aims of the program are to: 1) foster an appreciation for oneself, respect for others, responsibility for the common good, and awareness of a universal community and 2) supplement and reinforce values provided through other programs at the facility (health, anger management, spirituality, and recovery, substance abuse, relationships, addictions, and violence). The purpose of the curriculum is to provide a tool that adds new skills and insights that can make a difference in one's daily behavior. The labyrinth curriculum is taught in six 90 minute classes. The teacher is a Veriditas Certified Labyrinth Facilitator who developed the curriculum plan in accordance with correctional facility requirements. Veriditas is the leading national organization for certification of labyrinth facilitators (Veriditas, 2010). The role of the teacher is to facilitate the learning experience through weekly discussion followed by labyrinth walking.

Theoretical Framework

Trust, similarity, and knowledge during the educational experience are transferred from the teacher to the learner by sending and receiving information emphasizing a strong reliance on the interpersonal nature of relationships. Relational communication theorist Judee Burgoon (Burgoon & Hale, 1984) maintains that all interpersonal relationships vary along these three dimensions. Research has provided support for Burgoon's framework in disciplines other than communication including nursing. In Gilbert's 1998 study, nurse practitioners were found to display these dimension in successful nurse-client interventions. Similarly, these elements were seen in positive patient-physician communication (Gallagher, Hartung, & Gregory, 2001). Disciplines as disparate as theology (Baesler, 2002), and management (e.g., Walther, 1995) rely on elements of knowledge, trust, and similarity for successful communication. These three elements were used in project evaluation in the form of a client satisfaction survey.

METHODS

Human Subjects Protections

This study was approved by the Office for Human Subjects at the University of Massachusetts and the Hampshire County

Sheriff's Office and House of Correction following the current NIH, and National Commission in Correctional Health Care (2007) guidelines. Assent and consent were obtained by the research assistant (RA).

Setting

The Hampshire Sheriff's Office (HSO) is a 300-bed county correctional facility. The majority of offenders are serving sentences for crimes in some way related to substance abuse. While incarcerated, community-oriented, structured treatment programs are offered to all offenders motivated to pursue rehabilitation. The emphasis is on accountability, building peer support, and developing social skills that will decrease the chance of engaging in future criminal activity and antisocial behavior (Hampshire Sheriff's Office, 2004). Eligible offenders move through various phases of this program, ultimately culminating in their release from the institution with support services in place.

Sample, Recruitment and Enrollment Procedures

Study subjects were 14 offenders who volunteered for the labyrinth walking curriculum. This was a convenience sample of men who were enrolled in other treatment programs. Advertising to recruit volunteers followed institutional protocol with treatment and security staff approval. Flyers were posted in the men's living quarters briefly explaining the study. An information session was given by two researchers in the men's living quarters for all interested offenders who wanted to know more about the project.

Inclusion Criteria

All male comers enrolled in current treatment programs, age 21 and over, incarcerated at the Hampshire Sheriff's Office (HSO) and whose sentences extended to the completion of the study period, were eligible. All subjects were able to walk, write, and understand spoken and written English.

Exclusion Criteria

Ineligibility was determined by treatment and or security staff.

Design

This was a descriptive pilot study using a pretest-posttest design. The RA received specific training regarding the study protocol by the Principal Investigator. The RA met with each participant to gain verbal and informed written consent, and administer the QOL questionnaires and demographic form. This meeting was scheduled for 1 hour. All questionnaires were bound together for ease of completion and confidentiality to ensure a high response rate. The RA checked the front and back pages of the questionnaire for thorough completion before the subject left the room. Responses to the QOL instruments were collected before and after the labyrinth walking curriculum.

Blood pressures were taken before and after program sessions on weeks one and six. The labyrinth walking curriculum was conducted by a certified labyrinth facilitator across six consecutive 90 minute weekly meetings. The labyrinth walking curriculum is composed of didactic and physical components. Each week involved a short lecture based on a theme (introduction to the labyrinth, self-esteem, positive thinking, inner peace, relaxation, and forgiveness). The lecture was followed by a labyrinth walking exercise and ended with reflective journal writing. At the end of the six sessions, an acknowledgement of success was given in the form of a certificate of achievement. At the end of the 6-six week program subjects completed a satisfaction survey.

Instruments

Three self-report instruments were used to measure data.

1. Demographic information was gathered from a modified intake survey used at the jail. Thirty-six items addressed general socioeconomic data, as well as risk factor and substance abuse history information. There is no reported reliability and validity for this tool.
2. QOL was measured by the 12-item Short-Form Health Survey Version 1 (SF-12 v1) (Ware, Kosinski, & Keller, 1996). It was chosen for its ease of use as a generic measure of QOL, measuring both physical and mental health dimensions. In a sample of mental health patients (Salyers, Bosworth, Swanson, Lamb-Pagone, & Osher, 2000) test-retest reliabilities for both the physical and mental health dimensions were reported as .73 and .80 respectively.
3. Satisfaction with the teacher was measured by a brief questionnaire tested with offenders in a previous study. Reliability coefficients revealed statistics of .776 for the relationship subscale (Zucker, 2009). This instrument has six items: two items each measure trust, similarity, and knowledge of the teacher. Measurements were taken posttest only. Items were rated 1 (lowest satisfaction) to 7 (highest satisfaction) on a Likert scale.
4. Systolic and diastolic blood pressures were recorded before and after each program session weeks one and six for all subjects. Blood pressure cuffs were all of the same make and model. Two nurses took the blood pressures at the same time with the subject seated and using the left arm. Interrater reliability was excellent for three consecutive random BP readings taken prior to initiating the study.
5. Journal entries were collected and returned the following week. They were completed by all participants at the end of each walk and were content analyzed.

RESULTS

SPSS for Windows, Version 17.0 was used to perform simple statistics (frequencies, sums, and means) for demographic

TABLE 1
Demographic and Risk Factor Data (N = 14)

Age	33.85 (11.2)
English Language Speaker	93%
Married	86%
Dependent Children	36%
Drug of Choice - ETOH	64%
Age at First Use	12.7 (4.16)
Smoking	46%
Age at First Use	16.5 (4.7)
Previous Incarcerations	79%
Number of Times Incarcerated	2.4 (0.7)

Key: Reported means (Standard deviations) and frequencies (%)

findings, QOL instruments, and physiologic data. Effect size calculations were performed using SAS. Journals were analyzed using thematic analysis (Colaizzi, 1978). Major categories were created based on line by line analysis. Themes emerged from the data. Quotations representative of the meaning and experiences of participants were selected for illustrative purposes.

Quantitative Data

Demographic findings: Thirty-six data points were collected. See Table 1 for selected means, standard deviations, and frequencies of key demographic findings. Of note the average age of an offender was 34, mostly high school educated and single. Drug of choice was alcohol with age of use at 12 and one-half years. Seventy-nine percent of the sample was previously incarcerated more than twice.

QOL Data

The SF-12 v1 was chosen for this study because of its brevity and the emphasis on both physical and mental health measures. Mean scores before and after participating in the labyrinth curriculum were very similar. See Table 2 for SF-12 v1 mean scores.

Physiological Data

Blood pressures were measured before and after participating in the labyrinth walk. Decreasing trends in systolic blood pressure before and after the labyrinth walk were seen in week one and in week six. See Table 3 for BP recordings.

Relationship Subscale

Test results indicated high client satisfaction with the teacher. In this pilot study examining the concepts of relationship and satisfaction with the teacher were important dimensions of the labyrinth walking program. Each of the six items were scored from 1 (low satisfaction) to 7 (high satisfaction). Average relationship scores can be seen in Table 4.

TABLE 2
Pretest and Posttest SF-12 Subscale Items—Physical and Emotional Health

	Group	N	Mean	Std. Deviation	Std. Error Mean
1. Overall -General Health	Pre	14	1.93	.829	.221
1 = excellent 5 = poor	Post	9	1.89	.782	.261
2. Typical day-Does health limit you now in physical activity-moderate	Pre	14	2.79	.426	.114
1 = a lot 3 = not at all	Post	9	2.89	.333	.111
3. Does your health limit you now in physical activity-climbing stairs - 1 = a lot 3 = not at all	Pre	14	2.79	.426	.114
	Post	9	2.78	.441	.147
4. In past 4 weeks does your health limit you in physical activity – accomplishment	Pre	14	1.64	.497	.133
1 = yes 2 = no	Post	9	1.67	.500	.167
5. In past 4 weeks Does your health limit you in the kind of work or other activities	Pre	14	1.64	.497	.133
1 = yes 2 = no	Post	9	1.78	.441	.147
6. Past 4 weeks As a result of emotional problems, accomplished less than you like	Pre	14	1.64	.497	.133
1 = Y 2 = N	Post	9	1.56	.527	.176
7. Past 4 weeks Didn't do work as carefully as you like	Pre	14	1.71	.469	.125
1 = Y 2 = N	Post	9	1.67	.500	.167
8. Past 4 weeks Pain interferes with normal work	Pre	14	4.21	.579	.155
1 = Not at all 5 = extremely	Post	9	4.33	1.000	.333
9. Past 4 weeks -Been feeling calm and peaceful	Pre	14	4.14	1.292	.345
1 = all the time 6 = none of the time	Post	9	4.33	1.000	.333
10. Past 4 weeks Have energy	Pre	14	4.57	1.222	.327
1 = all the time 6 = none of the time	Post	9	4.00	1.118	.373
11. Past 4 weeks Felt downhearted	Pre	14	4.64	.929	.248
1 = all the time 6 = none of the time	Post	9	5.00	.500	.167
12. Past 4 weeks how much time has physical or emotional health interfered with social activities	Pre	14	4.00	.961	.257
1 = all the time 5 = none of the time	Post	9	4.00	1.118	.373

Qualitative Data

Reflective journals were completed weekly after each labyrinth walk, and analyzed based on the work of Colaizzi (1978). Analysis began by carefully reading participants' journals as well as researchers' anecdotal notes to better understand the data. Significant statements were extracted from each description that directly pertained to the phenomenon under study, in this case the weekly journal theme. Next the formulated meanings were identified, categorized into theme clusters, and participants' journals and researchers' anecdotal notes were referred to once again. The theme clusters were integrated into a description of participants' emotional reactions to labyrinth walking.

Journals were collected and returned the following week. The journal entries provided a glimpse into the experiences of the offenders in their own words. The comments were content analyzed and fell into three categories: 1) goals, 2) the experience of walking and 3) other thoughts. The experience of walking may be seen as a focus on the present, while goals may relate more to a focus on the future. Table 5 outlines descriptive themes, number of occurrences, and which category they most represented.

Themes included positive emotions, self-improvement, positive actions, self-esteem, reflective thoughts or self-awareness, hope, and expressions of gratitude. The majority of responses from the participants were positive, and related to the experience of walking the labyrinth.

Excerpts from the journals:

Positive Emotions/Thoughts: "I felt like a weight was lifted off my shoulders."

Self-Improvement: "Thinking about things before reacting in a beautiful thing."

Positive Actions/Intentions: "It helped me focus on what matters to me and what I have to do to keep that in my life."

Reflective Thoughts/Self-Awareness: "I began to watch my thoughts become my actions."

Self-Esteem: "As I walked the labyrinth, I can forgive myself."

DISCUSSION

Findings indicate that initiating a pilot labyrinth walking curriculum at a county jail is feasible, it is low cost, and resources

TABLE 3
Blood Pressure Recordings Week 1 and Week 6 Before and After the Labyrinth Walk

Subject	Week 1 - Before	Week 1 - After	Week 6 - Before	Week 6 - After
1	128/74	126/74	0	0
2	142/82	142/82	132/72	132/70
3	118/68	104/64	0	0
4	122/76	102/78	0	0
5	120/60	118/62	112/78	114/66
6	118/72	116/68	110/66	100/58
7	134/88	108/88	120/60	124/82
8	112/82	116/80		
9	110/72	128/78	120/78	110/72
10	118/60	118/74	122/74	128/78
11			118/80	114/78
12	140/84	142/82	142/92	130/80
13	118/64	120/60	110/60	120/64

were available to adequately execute the study. Measuring indicators of QOL and blood pressure were useful in determining an impact of the curriculum on physical and psychological dimensions of health in this population. Due to the small sample size no tests of significance between groups were performed. There were instances of unavoidable missing data. Reasons included subjects being late getting to class, having to leave early because of having a visitor, being dismissed by security or treatment staff from class, or being released from the facility unexpectedly.

While the aims of the pilot study were not to measure statistical significance, preliminary measures were supportive of future work and refinement. For example, comparison of the SF-12 v1 data both before and after the labyrinth walking curriculum showed no real differences. Perhaps using this tool in a larger sample will assist in determining any significance attributed to the labyrinth walking curriculum on QOL. This study did perform power analyses and effect size determinations in anticipation of a future study. It was determined that a future

TABLE 4
Posttest Relationship Subscale (N = 9)

Question Code	Theme	Mean score
r1	The teacher is sincere	6.8
r2	The teacher could connect with me	6.3
r3	The teacher knew what she was talking about	6.8
r4	The teacher seemed honest	7
r5	The teacher made me feel important	6.8
r6	The teacher is an expert	6.8

Score Key: 1 low relationship; 7 high relationship

TABLE 5
Reflective Journal Descriptive Themes (Number of Occurrences and Category Type)

Positive Emotions/Thoughts (33 - Experience of Walking)
Self-Improvement (11 - Goals)
Positive Actions (9 - Experience)
Self-Esteem (7 - Goals)
Reflective Thoughts/Self-Awareness (6 - Experience and Other)
Hope (3 - Goals)
Expressions of Gratitude (2 - Other)

sample will require between 70 and 80 subjects to achieve 80% power at a significance of 0.05.

There is little comparative data in the literature. Sandor and Froman (2006) measured positive and negative affect scores (PANAS) in labyrinth walkers in an effort to determine effect size differences in blood pressure, pulse, and affective outcome measures. That study was useful in determining feasibility of using physiologic and affective measures but it was not clear that the instruments measured what had been intended. Using QOL instruments with similar populations has informed the choice of instruments in this study. The literature has shown that in and out of treatment IDU return to heavy drug use negatively impacting their QOL (Costenbader, Zule, & Coomes, 2007).

In addition to these outcome measures, the offenders' level of satisfaction with the teacher measured aspects of the relationship based on relational communication constructs. Outcome data suggested high satisfaction with the teacher. Similar findings have been reported in therapy teams from the United Kingdom, working with couples and families of those with alcohol addiction. Their data suggested that the nonjudgmental interactional manner of the therapeutic team used language, reflection, and discourse resulting in collaborative learning (Flynn, 2010). Benefits of this attention to relationship and communication include encouragement to continue reflective journaling once the 6-week educational program is finished, and to incorporate the messages of improved health into daily life.

The participants found journaling to be a meaningful reflective process. Baikie and Wilhelm (2005) describe the growing literature on the benefits of expressive writing over the past 20 years and conclude that overall it has been found to result in improved physical and psychological health. In this study, quotes and themes that emerged from the offenders' journals resulted in a richer description of the men's experiences following labyrinth walking. Overall comments were hopeful, positive, and reflective. These elements demonstrate meaningful aspects of the experience.

Some study limitations were identified. One was the transient nature of participation. Despite efforts to screen potential subjects, institutional routines and priorities were responsible for missing data, particularly in the post program phase. Another

limitation was having more than one person taking and recording blood pressure measurements. It is recommended in a future study that the same person take and record all blood pressures.

Finally a limitation was also noted in using the SF-12 v1 as some of the questions did not ideally capture perceptions of physical and mental health of importance to offenders. In a review article of a variety of QOL instruments, Gutteling, deMan, Busschbach, and Darlington (2007) described barriers such as definitions of QOL, lack of standardization of measures, and appropriateness of questions sets. Question sets are focused on general QOL, disease conditions, or utility measures. In this study the category "Moderate activities," as listed in Question 2, such as moving a table, pushing a vacuum, bowling, or golfing area not activities offenders can relate to. Also offenders do not have an opportunity to "climb several flights of stairs" as outlined in Question 3. These revelations will inform the subsequent study methodology. One recommendation would be to determine if measures of QOL are important in evaluating interventions for this population. DeMaeyer, Vanderplasschen, and Broekaert (2010) critiqued QOL instruments and concluded they are narrowly focused on functional status and do not provide information from the client's point of view.

CONCLUSIONS AND IMPLICATIONS

A labyrinth walking program for offenders can increase their awareness about managing stress and finding some peace while experiencing incarceration. Stress management has an important role in managing negative emotions and reducing substance abuse. In a future study more appropriate measures of QOL will be sought. In addition to blood pressure a more reliable measure of stress such as salivary cortisol will be considered. Elements of trust, similarity, and knowledge are key elements in forging educational relationships between the teacher and learner, and these qualities should be encouraged when selecting a labyrinth facilitator. This pilot data suggests that labyrinth walking can positively impact offenders' physical and mental health.

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