Using Evidence-Based Teaching to Support an Innovative Teaching Strategy in an Undergraduate Research Course: A Longitudinal Study

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Objectives

- Identify the need for evidenced-based teaching

- Describe an innovative teaching strategy

- Discuss an instrument designed to support the innovative teaching strategy

- Discuss a longitudinal study aimed at establishing evidence for an innovative teaching strategy designed for an undergraduate research course.

- Consider using the group Evidenced-Based Project in your nursing program.

Why the Need to Have Evidence-Based Teaching?

- It's essential that faculty provide evidence for innovative teaching strategies in research courses

- Avoid doing the same thing over and over and not really knowing if the strategy is effective

- Students need to be assured that faculty are using evidence-based teaching to help them understand evidence-based practice

- Evidence-based teaching is vital for nursing students to gain skills to incorporate evidence-based practice as registered nurses.

Barriers to Evidence-based Practice

- Literature shows registered nurses reported having:

- Difficulty in reading research articles

- Limited skills in locating research articles

- Limited skills in critiquing research articles

- Limited interaction with nurse researchers and nurse clinicians

- Lack of research courses focused on the process of evidence-based practice.

Eliminating Barriers

- Prepare baccalaureate students with skills …
- in identifying clinical problems
- in conducting a thorough review of the literature
- in learning the basics of critiquing research articles
- in determining the appropriateness of research findings
- developing beginning skills in participating in integrative reviews as registered nurses.

Purpose

- The purpose of this research study was to describe student perceptions of the *Evidence-Based Group Project* assignment used in a nursing research course to establish evidence for its use and to determine whether or not students gained skills leading to being able to participate in evidence-based practice after graduation.

The Group Evidence-Based Project

- Form into groups of 4-6 students

- Identify a problem in a practice area

- Conduct a literature review

- Formulate a PICO(T) question

- Develop a matrix related to the topic (enter three articles per student)

- Each student will summarize and critique one article

- Share articles and compare findings

- Decide if the findings can be used for evidence-based practice

- Present project using a PowerPoint

Method

- IRB approval was granted to evaluate the *Evidence-based Group Project assignment* in a research course.

- A cover letter explained the study and at the end of the fall 2006, spring 2007, fall 2007, spring 2008, spring 2013, spring 2014, and spring 2015 semesters, students were administered a 21-item Likert-type instrument.

- Anonymity was obtained by having no names or code numbers on the questionnaire or the demographic data form and the two forms were separated for analysis.

The Evidence-Based Project Instrument

- **THE EVIDENCE-BASED GROUP PROJECT ASSIGNMENT HELPED ME**:
- 21 items were scored strongly disagree (1), disagree (2), somewhat agree (3), agree (4), and strongly agree (5)
- A summated score was obtained with the possibility of scores between 21 and 105
- Consent was implied by turning in a completed instrument.

Selected items on the instrument

THE EVIDENCE-BASED GROUP PROJECT ASSIGNMENT HELPED ME:

1. Better understand the research process.

3. Recognize the difference between traditional nursing practice and evidence-based practice.

4. Gain skills in identifying a clinical problem that needs to have evidence.

5. Gain skills in conducting a review of literature related to an identified clinical problem

9. Gain skills in critiquing a research article.

Selected items on the instrument

THE EVIDENCE-BASED GROUP PROJECT ASSIGNMENT HELPED ME:

18. Have confidence to identify clinical problems as a registered nurse (RN).

19. Have confidence to participate in an integrative review activity as a RN.

20. Have confidence to participate in evidence-based activities as an RN.

21. Be better prepared to integrate evidence-based practice as a RN.

Sample

- Junior (40%) and Senior (60%) nursing students (n=269)
- Traditional nursing students (67%)
- Accelerated nursing students (previous degrees) (33%)
- Predominately female (90%)

Results

- The mean summated scores for all groups (n=269) ranged from 78 to 102 and the overall mean was 95.

- The mean scores of each item on the instrument ranged from 3.89 to 4.80 (out of 5)

- No item means were in the disagree or strongly disagree category

- Question 8 had the highest mean item score (4.70) related to gaining skills in identifying parts of a research article such as the abstract, methods, results, and discussion.

Results

- Internal consistency of the instrument was established using a Cronbach's Alpha

- The alpha score for the entire sample was .95 (very high)

Results

- Percent of respondents (269) agreeing with the item:
- 1. Better understand the research process (96%).
- 3. Recognize the difference between traditional nursing practice and evidence-based practice (96%).
- 4. Gain skills in identifying a clinical problem that needs to have evidence (97%).
- 5. Gain skills in conducting a review of literature related to an identified clinical problem (97%)
- 9. Gain skills in critiquing a research article. (96%)

Results

- 18. Have confidence to identify clinical problems as a RN (96%).
- 19. Have confidence to participate in an integrative review activity as a RN. (95%)
- 20. Have confidence to participate in evidence-based activities as an RN. (96%)
- 21. Be better prepared to integrate evidence-based practice as a RN. (95%)

Discussion

- The results lend support to using the *Evidence-based Group Project a*ssignment in the research course and provide evidence for its use

- Students had an overall better understanding of the research process and were able to identifying clinical problems needing evidence

- Skills in conducting a review of literature and critiquing research articles were enhanced

- Students reported having confidence after graduation in identifying clinical problems, participating in an integrative review activity, and being better prepared to integrate evidence in their nursing practice.

Implications for Nursing Education

- Nursing educators can implement evidence-based teaching
- More interest is needed among nursing faculty to support teaching strategies with evidence
- Instruments need to be developed to elicit data to support innovative strategies faculty are using in the classroom
- Integrative reviews of different innovative teaching strategies with evidence could add to the knowledge base of evidence-based teaching
- More published research would strengthen the knowledge base of evidence-based teaching.

Implications for Practice

- Using the presented innovative teaching strategy could lead to clinical settings having new graduates who are better prepared to:

- Identify clinical problems needing evidence

- Locate, understand, and critique research articles and systematic reviews

- Participate in EBP projects in the clinical setting

In conclusion, a quick example of a student project…
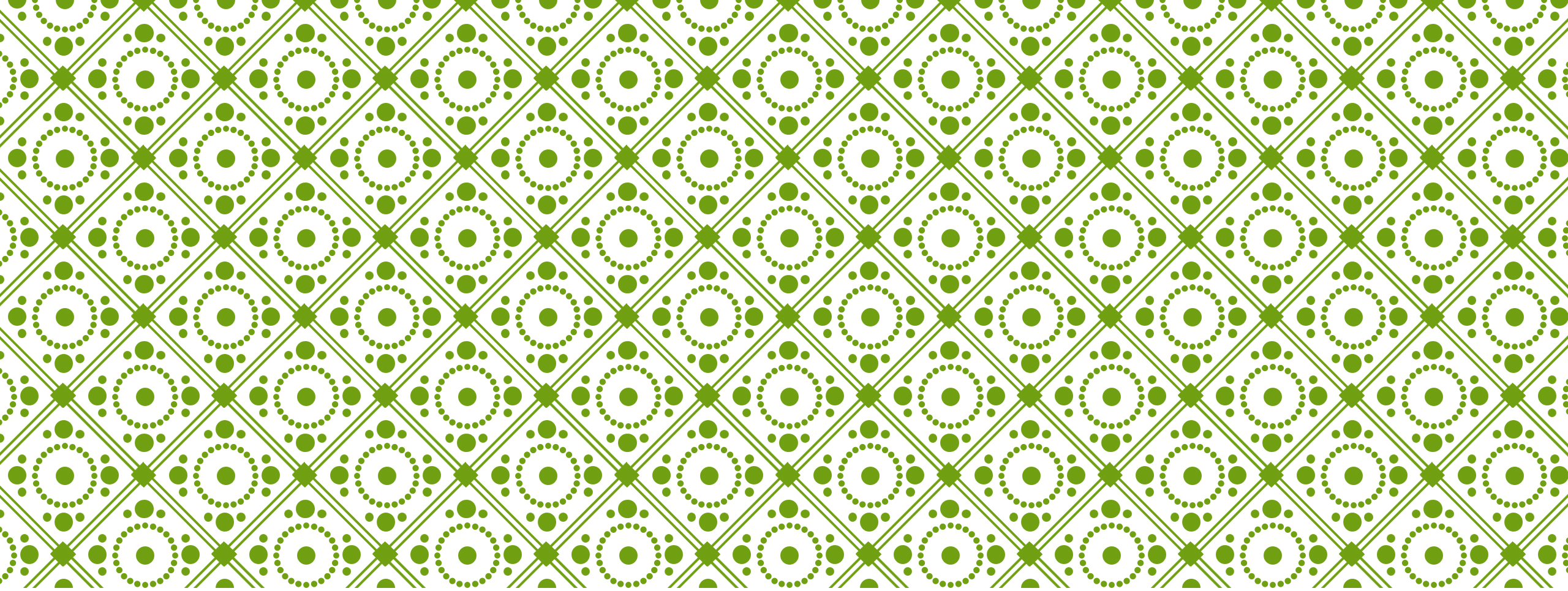
MUSIC THERAPY AND THE EFFECTS ON ELDERLY MENTAL HEALTH

PROBLEM RATIONALE

❖ Recent evidence has thrown doubt on the true effectiveness of anti-depressants. Therefore, it is important to look for new treatments of mood disturbances in the elderly population.

❖ "Major depression in older people living in the community range from less than 1% to about 5% but rise to 13.5% in those who require home healthcare and to 11.5% in older hospital patients" (CDC, 2012)

❖ 80% of depressed elderly suffer from at least one chronic disease (CDC, 2012)

❖ "Among older Americans (aged 60 and over), more than 76% used two or more prescription drugs and 37% used five or more" (CDC, 2010)

❖ Embrace holistic care and lifestyle by using alternative therapies

PICO QUESTION

In elderly patients with mental health issues, is music therapy effective in decreasing their depression levels?

❖Population- Depressed elderly patients throughout several countries

❖Intervention- Music therapy

❖Outcome- Decreased levels of depression

due to music therapy

REVIEW OF LITERATURE

❖ A search of the literature was conducted using Galileo, Google, Research Gate

❖ The key terms used were: music therapy, depression, elderly, mental health (used Boolean operators)

❖ The terms "depression" and "mental health" retrieved the most articles, but most were not relevant to our topic

❖ All articles were retrieved online

WHAT IS MUSIC THERAPY?

❖According to the American Music Therapy Association, "Music Therapy is the clinical and evidence-based use of music interventions to accomplish individualized goals within a therapeutic relationship by a credentialed professional who has completed an approved music therapy program."

CRITIQUE SUMMARY #1

Article Citation W. Verrusio, P. Andreozzi, B. Marigliano, A. Renzi, V. Gianturco, M.T. Pecci, E. Ettorre, M. Cacciafesta, N. Gueli (2014). Exercise training and music therapy in elderly with depressive syndrome: A pilot study. *Complementary Therapies in Medicine*, 22, 614-620.

Introduction

❖The purpose of this study was to determine whether combined music and physical exercise could have a positive effect on the mood of geriatric subjects who have light to moderate depression.   Also to determine if mood persists over time in the music & exercise group

❖It compared the music and physical therapy group with a pharmacological therapy group

SUMMARY CRITIQUE #1

Description of participants

❖ Mean age of the participating persons: 75 years old +/- 7.4 years

❖ 11 males and 13 females

❖ The severity of depression: major depression with light or moderate severity (GDS score between 5-12)

❖ Criteria that excluded participants form the trial:

▪ Severe depression

▪ Patients taking any pharmacological drugs for their depression

▪ Patients for whom physical exercise was not recommended (Systolic blood pressures over 200mmHg, diastolic blood pressures over 110 mmHg, Fasting glucose over 250mg/dL, unstable angina pectoria, arrhythmias, severe heart valve diseases, aneurysms, any severe systemic diseases)

SUMMARY CRITIQUE #1

Methods/Design

❖Randomized control trial

❖Patients randomly assigned to two groups by using computerized random numbers

❖Group allocation was not communicated to participants until first music/exercise session or first prescription of the drug

❖Electronic chart filled out for each subject, recording the parameters at the start of the study (W0), at three-month point (W12), after six months (W24), and in the music & exercise therapy group at one month after the end of the study (W28)

❖Pharmacotherapy group: antidepressant medications

❖Music & exercise group: 2 sessions per week, each session lasting 1 hour

SUMMARY CRITIQUE #1

Music & Physical Therapy Group

❖ Divided into 3 subgroups, each with 4 participants

❖ 2 sessions per week, each session lasting 1 hour

❖ Moderate intensity (not to exceed target heart rate)

❖ Warm up muscles, general gymnastics or postural gymnastics, aerobic training on stationary bicycles and treadmills, post-work decompression

❖ Blood pressure, resting heart rate, pulse ox, FBG were assessed before and after

❖ 3 music playlists/genres of music: Jazz, Classical, Modern

❖ Each session was designed as follows:
  ▪ Warm up (light exertion, slow music rhythm)
  ▪ Main part (moderate-intense exertion, fast music rhythm)
  ▪ Cool down (decompression phase, slow music rhythm)

SUMMARY CRITIQUE #1

Measures:

❖ Hamilton Anxiety Scale

❖ Geriatric Depression Scale

❖ Plasmatic cytokine dosage, as a stress indicator

❖ For quantitative variables mean and standard deviation were calculated

❖ Mean values compared using Student's t-test

❖ The change in the parameters between groups was compared by one-way analysis of variance

❖ HAS score at baseline was used as covariate (ANCOVA) to control the effect of this variable on the outcome at 12 and 24 weeks

❖ 95% confidence interval; p value below 0.05

SUMMARY CRITIQUE #1

RESULTS

Pharmacotherapy Group

- Minimal variations in GDS and HAS scores at 12 weeks
- Reduction in anxiety observed after 24 weeks compared to baseline
- Side effects of mediations
- Some participants medications had to be changed and other medications had to have their dosage values increased at 12 weeks

Comparison

- Differences between the pharmacotherapy group and music/exercise group for HAS measurements at 12 weeks and at 24 weeks
- Differences between the pharmacotherapy group and music/exercise group for GDS at week 24

Music & Physical Therapy Group

- Significant within group reductions both in anxiety and in depression after 12 and 24 weeks
- Cytokine dosages showed a linear correlation between high levels of cytokine and a high GDS score
- After 6 months, a reduction of 7mmHg in the average systolic blood pressure, reduction of 3mmHg in the average diastolic blood pressure, average reduction of 27 mg/dl in TC (15% reduction) and 14.75 mg/dl in the TG (10% reduction), reduction of 16.7 mg/dl in FBG, an average reduction of 6.2 cm in the waist circumference
- Assessment of mood carried out 4 weeks (W28) after the suspension of the trial, which resulted in only minimal differences in the GDS and HAS scores
- No adverse side effects were documented in the music/exercise therapy group

SUMMARY CRITIQUE #1

Strengths

❖Using randomization techniques gives each participant an equal opportunity to be assigned to a group and this technique eliminates any biases that could affect the results

❖The t-test is a useful test that is used to show the differences in two different variables, which would be suitable to use in this case. ANCOVA is a beneficial analytic technique that is used to help control confounding factors on outcomes

❖Implications for clinicians in the management of light and moderate depression

❖Evidence can treat both mood disturbances and the various comorbid conditions that can aggravate the psychophysical health of elderly patients

Limitations

❖Small sample size- Can't generalize the findings

❖Tested music & exercise therapies together- can't disentangle the contribution of each component to the overall effect

❖Placebo effect- results of the training in the music/exercise over the short term can be attributed in part to this

SUMMARY CRITIQUE #2

Introduction

The purpose of this trial was to study the effects of music therapy on sleep quality and depression. More specifically, the study sought to discover what effects music therapy had on sleep quality, vital signs, and depression levels of the elderly.

Background

❖Of great interest to the researchers

❖Hypothesis not directly stated, but implied

❖Purpose supported by primary and secondary sources, clearly cited/identified

❖Null Hypothesis present: no statistical differences on physiological measures and psychological measures between control and experimental and no statistical changes on either during time points in either group.

SUMMARY CRITIQUE #2

Methods

❖Criteria for participants was: belong to specific community center in Hong Kong, 60 years old or above, male or female but **NOT** deaf, without altered mental/cognitive impairments, and no recent family death

❖42 of 78 members eligible, occurred between Dec. 2006- Jan. 2007

❖Rigorous study design used: randomized controlled trial with repeated measures

❖Used power and statistical analysis in form of Mann-Whitney's U design, decided on probability of 0.75 to detect differences among groups

❖Of 42 subjects, 21 randomly assigned to control and 21 to experimental.

❖Result of 80% power and 5% significance

SUMMARY CRITIQUE #2

Methods Continued

▶ Experimental group subjected to music therapy for 30 minutes/week for 4 weeks. Control group had no music therapy.

▶ Within 5-8 minutes of ending the intervention, results were gathered from subjects.

Measures

1. **Demographic-** Age, Sex, marital status, education level

2. **Physiological-** Use of digital monitor for heart rate and blood pressure

3. **Psychological:**

   Use of **Pittsburg Sleep Quality Index (PSQI),** self-rated questionnaire to measure sleep quality. Sensitivity of 89.6, specificity of 86.5, alpha of 0.83, and test-retest reliability of 0.85.

   Use of short version of **Geriatric Depression Score (GDS-15),** asking subjects questions about how they feel. Sensitivity of 92.2%, specificity of 92.5%, internal consistency alpha of 0.94.

SUMMARY CRITIQUE #2

Results

❖Experimental group alone showed statistically significant decrease in geriatric depression scores (p<0.001) and sleep quality (p<0.001) by week 4.

❖Control group showed no statistically significant decreases in geriatric depression scores (p=0.791) and poor sleep quality (p=0.252).

❖No statistical differences of physiological data (BP & HR) among groups as determined by Mann-Whitney U-Test.

❖No statistical differences of physiological data (BP & HR) during four time points for either group.

❖Overall, no statistically significant differences among the groups.

❖Demographic data showed average age was 75 or above, 54.8% female, 81% married, 60% no religious belief, and 54.8% supported by own children.

SUMMARY CRITIQUE #2

Discussion

▶Despite no statistical significance, article shows that music therapy can be an option for nursing interventions to aid the elderly suffering from depression or sleep inadequacy.

Strengths

❖Rigorous experimental design

❖100% follow-up among participants

❖Researchers took ethical measures-approval, written consent, safety, and privacy for subjects

❖Researchers were self-analyzing and aware of study's limitations

Limitations

❖Small sample size of 42

❖Possible bias because mutual interests between facility and researchers

❖Experimental group decrease in depression/poor sleep may have been Hawthorne effect

❖Use of non-parametric methods and not parametric statistics like ANCOVA, to control confounding variables

SUMMARY CRITIQUE #3

Introduction

❖ The purpose of the study was to empirically test the hypothesis that Iranian music therapy will have a measurable effect on stress, anxiety, and depression of a group of people living in a residential facility.

❖ Determine the generalizability of Persian music group therapy on the elderly.

SUMMARY CRITIQUE #3- METHODS

❖ Randomized controlled trial of Iranian music therapy, with a pre- and post-intervention measurement of stress, anxiety and depression symptoms

Intervention Group

❖5 females and 6 males received 10 weeks of 90 minute daily music-based sessions

- Rhythmic instruments
- Folk Persian singing
- Rhythmic movement
- Memory reminiscing associated with song listening

Control Group

❖3 females and 5 males received 10 weeks of 90 minute daily regular activities that were not music-based

METHODS

❖The 21-item Depression Anxiety Stress Scale (DASS-21) is a type of Likert scale.
  - 0 – "not at all," 1- "a little," 2- "more than usual," 3- "much more than usual"

❖Cronbach's alpha is 0.94 for depression, 0.87 for anxiety, and 0.91 for stress.

❖High internal consistency

SUMMARY CRITIQUE #3- METHODS & RESUTS

Statistical Analysis

❖Non-parametric statistical analysis

❖Mann-Whitney U test was run using SPSS to compare differences in pre-test scores for the two groups on DASS-21 measures.

❖Levels of $P < .05$ were considered statistically significant

Results

❖No significant differences in pre-intervention scores were found ($P = .96$) between the two groups

❖Statistically significant differences in mean scores of pre- and post-intervention between the two groups after music therapy: for anxiety ($P = .004$), for depression ($P < .001$), and for stress ($P = .001$).

Results

These results indicated significant improvements in anxiety, depression, and stress in the music therapy group as compared to the control group.

Table 1 Changes in DASS-21 scores pre-/post intervention in music intervention and control groups							
DASS-21							
	Control (n=8)		Intervention (n=11)		U	Z	P-value
	Mean (SD)	Mean rank	Mean (SD)	Mean rank			
Depression score							
Pre-test	8.00 (3.74)	8.63	9.82 (4.77)	11.00	33.00	-.91	.36
Post-test	15.25 (4.06)	15.44	3.91 (2.38)	6.05	.50	-3.60	<.001
Anxiety score							
Pre-test	5.38 (4.27)	9.94	5.27 (4.67)	10.05	43.50	-.04	.96
Post-test	8.13 (2.16)	14.38	3.27 (2.97)	6.82	9.00	-2.91	.004
Stress score							
Pre-test	10.13 (3.35)	11.06	9.45 (6.44)	9.23	35.50	-.70	.48
Post-test	13.00 (3.25)	14.81	5.45 (3.77)	6.50	5.50	-3.20	.001

Cronbach's alphas for this study were computed 0.70, 0.66, and 0.76 for depression, anxiety, and stress respectively.

SUMMARY CRITIQUE #3- DISCUSSION

Strengths

❖Rigorous experimental design – Randomized controlled trial

❖Longitudinal study

❖Overall positive and effective impact of music therapy on anxiety, depression and stress in a sample of Iranian clients

❖Music therapy created an environment for enhanced mental and emotional interaction with peers

❖Music became a medium that empowered participants to acquire better balance of their physical movements and body posture and to evoke a positive feeling by facilitated self-control

DISCUSSION

Limitations

❖Small pool of participants, however research in this area is encouraging

❖Small time frame

❖By utilizing non-parametric statistical methods, confounding variables were not controlled

❖Study focused on Iranian populations and solely used Iranian music and Iranian instruments, which limits the generalizability even further.

❖It is recommended that this study be done in other cultures for comparative purposes, over a longer time frame, and with a greater pool of participants.

SUMMARY CRITIQUE #4

Article Citation: Chu, H., Yang, C., Lin, Y., Ou, K., Lee, T., O'Brien, A.P., & Chou, K. (2014). The Impact of Group Music Therapy on Depression and Cognition in Elderly Persons with Dementia: A Randomized Controlled Study. Biological Research for Nursing, 16(2), p. 209-217.

Introduction:

❖This quantitative study carried out by Chu et al. aimed to determine the effectiveness of group music therapy for improving depression and delaying the deterioration of cognitive functions in elderly persons with dementia.

SUMMARY CRITIQUE #4

Methods

❖ Study conducted in Taiwan, a Chinese province

❖ Nonprobability sampling, more precisely a purposeful sampling with inclusion and exclusion criteria, using G power to estimate ideal sample (104 participants)

❖ Sample bias was minimized with an α of .05, an effect size on depression of .5 indicating moderate effect, and a power of .80

❖ The experiment itself involved a randomized control trial using a prospective, randomized, parallel-group design.

❖ The 104 participants were randomly and blindly assigned to an experimental group of 52 subjects and a control group of 52 subjects.

❖ In addition to the standard usual care, the 52 subjects of the experimental group were exposed to two 30-minutes for six weeks, while in the same time frame, the control group participants received only the usual standard care.

SUMMARY CRITIQUE #4

Results

❖Longitudinal design, data collected four times throughout the experiment.

❖Researchers used observational and biophysiologic measures.

❖The Chinese version of the Cornell Scale for Depression in Dementia (C-CSDD) to evaluate the effect of the intervention on depression

❖The Mini-Mental State Examination (MMSE) to assess the intervention's effects on cognitive function.

❖Using the statistical Package for the Social Science (SPSS) version 17.0 , The analysis of the CSDD, showed a significant difference in the change in depression level between the music therapy group and control group

❖Analysis of the biophysiologic data, the salivary cortisol, showed no significant difference between the experimental group and the control group

❖Analysis of the MMSE showed upward trending as intervention was being implemented and showed a statistically significant difference (P=.006) between the experimental group and the control group.

SUMMARY CRITIQUE #4

Discussion:

❖ Strengths of the study include an extensive literature review, the objective measures, the scientific rigor, the large sample size, the randomized control trial, and the reliable statistical instruments constitute the main strengths of this article and the study.

❖ Limitations: short duration of the experiment and the narrowed geographic area of study affect the generalization of the findings. Additionally, participant attrition as 5 subjects did not complete the study, which could affect its reliability.

CONCLUSIONS DRAWN FROM THE RESEARCH ARTICLES

❖ Studies were of sufficient rigor and had adequate control over variables being tested

❖ Strong and descriptive statistics were used

❖ Appropriate screening tools for pre/post depression level measurements

❖ Longitudinal studies

❖ Limitations: small sample sizes, findings cannot be generalized, more research needs to be conducted

ARTICLE CONCLUSIONS

❖ Music therapy significantly reduced levels of depression and anxiety among elderly patients

❖ 13 out of 13 studies revealed lowered levels of depression

❖ 3 out of 14 articles also measured biophysiologic measures (blood pressures, cortisol levels, cytokine dosages, etc.)

❖ 9 out of 14 articles used professional music therapists

❖ Further research studies need to be undertaken to gather more evidence in support of music therapy as an alternative form of treatment

EVIDENCE-BASED PRACTICE DECISIONS

❖ Music therapy is an alternative, inexpensive, and non-invasive therapeutic intervention

❖ Music therapy has no adverse affects

❖ Do not need a doctor's order to use on a patient

❖ Music taps into our emotions– it can make us feel a certain way

EVIDENCE-BASED PRACTICE DECISIONS

❖Music makes it easy for music therapists to structure and facilitate a group process

❖Music is motivating!

❖Development of musical skills in older adults may facilitate social integration, self-expression, structuring of time, and intellectual stimulation

❖Music is effective as a therapeutic medium because it is flexible, structured, follows familiar patterns that unfold through time, and is an aesthetic experience

OUR RECOMMENDATIONS

❖Music therapist on staff at nursing homes & rehabilitation facilities. Also have designated music sessions every week

❖In hospital settings, we recommend having musical equipment that can be checked out (MP3 player, tape player, iPod, CD's, cassettes)

❖Organize a seminar or a continuing education program on music therapy for nurses on staff

❖Provide culturally competent care by having a database of a variety of international music or different genres and from different decades

SHOW ME!!!

https://www.youtube.com/watch?v=5FWn4JB2YLU

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