Clinical Efficacy of Music Therapy in Addiction Counseling: A Systematic Review

Marissa Renee Rinehart

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Clinical efficacy of music therapy in addiction counseling: A systematic review

by

Marissa Renee Rinehart

A thesis submitted to the Graduate College
In partial fulfillment of the requirements
for the degree of Masters of Music
School of Music
Western Michigan University
May 2015

Thesis Committee:

Edward A Roth, M.M., Chair
Brian L. Wilson, M.M.
David S. Smith, Ph.D.
Clinical efficacy of music therapy in addiction counseling: A systematic review

Marissa Renee Rinehart, M.M.
Western Michigan University, 2015

A previous systematic review study by Mays, Clark, and Gordon in 2008 reviewed music therapy research to look into the clinical efficacy of music therapy and addiction counseling. Their research concluded that the present literature contained few articles that had quantitative evidence and the music therapy that was presented was not an independent therapy for treatment for patients with substance abuse. This systematic review sought to research literature within the past six years that studied the effects of music therapy on clients who were dealing with substance abuse to review the progress of music therapy research since the 2008 article was published. The results from this study concluded that more research has been done since the Mays, Clark, and Gordon study. Articles indicate that music therapy is offered as both an independent and additive therapy as well as having more quantitative data. However much like the Mays, Clark, and Gordon study there was little consensus between the literature reviewed that would indicate a standardization of treatment within this population.
ACKNOWLEDGEMENTS

I would like to begin by acknowledging my fantastic thesis chair, Ed Roth, who patiently and ambitiously stood beside me through this entire process. His guidance and support through this project have been immeasurably helpful and he has been a cornerstone of this project.

I would like to also thank my other thesis members, Professor Brian Wilson and Professor David Smith. Their guidance and advice have given me such great direction through this project.

Lastly, I would like to thank my husband, Ian Kells. He is my rock and has shown me such great support through the completion of my masters. He has always believed in me and always supported me in my pursuit of this profession. He is my number one champion and I owe all of my sanity during this project to him.

Marissa R. Rinehart
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INTRODUCTION

According to the Centers for Disease Control and Prevention (CDC, 2014), in 2012 drug overdose was the leading cause of injury death in the United States (33,175 deaths). That is more than car accident related deaths that same year. In 2011 substance abuse caused 2.5 million hospital visits. In reviewing these statistics, the consequences of substance abuse in America can have a devastating toll.

In understanding recovery and addiction, it is important to understand the five stages of addiction recovery. “Motivation of addictive behaviors involves progression through five stages: pre-contemplation, contemplation, preparation, action, and maintenance. Individuals typically recycle through these stages several times before termination of the addiction” (DiClemente, Norcross, & Prochaska, 1992, p.1102). In the pre-contemplative stage the addict does not see an issue with the addiction but usually feels pressure from friends, family, and society to change and seek treatment. This is the first step of recovery. Contemplation is the stage in which the individual recognizes there is an issue but is still not ready to change. This could be visualized as the “on the fence” stage in which the participant is neither in a state of mind to change nor rejecting the issue of the addiction. Preparation, the third stage to addiction recovery, is when the individual is not actively quitting but is fully ready to quit/change their addictive behavior and verbally processes the decision. Action is the fourth stage in which the individual actively changes their addictive behavior for a brief amount of time. Action then morphs into the fifth stage, maintaining, which is upholding sobriety and abstaining from the substance or addictive behavior for three to six months. Continuation of this for more than six months is considered termination or full recovery.
However, success of long-term maintenance may only come after three to four action attempts (DiClemente, Norcross, & Prochaska, 1992). It should also be noted that, with addiction, relapse is the rule rather than the exception (DiClemente, Norcross, & Prochaska, 1992). Relapse occurs when the individual in the five-step recovery partakes in the substance or addictive behavior again and falls back into one of the four steps. These stages are critical in understanding an individual struggling with addiction because one cannot view or treat all individuals with addiction the same. For example, a study may have twenty smokers who are interested in treatment. However there may be five who are in the contemplative stage, ten in the preparation stage, and five in the action stage of addiction recovery. To treat all twenty participants the same could be dangerous. This could be particularly an issue for the five individuals in the pre-contemplative stage because they are not quite ready to change. The additional failure of not progressing at all in recovery could possibly turn the individuals off to change completely. When looking into research that revolves around addiction counseling it is important to take these steps into consideration and determine if the studies are focusing on recovery in one of these five areas.

According to the American Music Therapy Association (2014) in working with individuals with trauma, depression and substance abuse, music therapy can:

Enhance social or interpersonal, affective, cognitive, and behavioral functioning. Research indicates that music therapy is effective at reducing muscle tension and anxiety, and at promoting relaxation, verbalization, interpersonal relationships, and group cohesiveness. This can set the stage for open communication and provide a starting place for non-threatening support and processing symptoms associated with or exacerbated by trauma. A therapist can talk with a client, but a qualified music therapist can use music to actively link a client to their psycho-emotional state quickly. In certain settings, the active use of music therapy
interventions has resulted in a shorter length of stay (treatment period) and more efficient response to the client’s overall intervention plan. (p.1)

Using music therapy in this manner has the possibility of uniquely helping individuals with substance abuse issues. As mentioned above readiness to change and relapse are two of the bigger challenges facing individuals with substance abuse. Music therapy may be able to respond to these needs and, in some instances, shorten the length of a patient’s stay. In Silverman’s 2009, 2011(a), 2011(b), and 2012 studies on music therapy and addiction counseling, the researcher looked into the effects of music therapy on in-patients’ readiness to change, which is an important step in rehabilitation as explained above. In all four studies, readiness to change showed a significant difference in the music therapy groups. In these studies Silverman used music therapy interventions that included group songwriting and lyric analysis. Albornoz (2010) studied 24 male subjects in a rehabilitation hospital utilizing instrument improvisation interventions. The study focused on music therapy and its effect on depression. The results of this study indicated a lower depression rating following music therapy sessions. Gardstrom et al. (2013) conducted a survey study for individuals with dual diagnosed substance abuse and client perception of anxiety, anger, and sadness post music therapy. The study utilized three different music therapy interventions: composition, receptive listening, and improvisation. The results indicated that more than half of the clients reported a decrease in sadness as well as a decrease in anxiety after music therapy sessions. Cevasco et al. (2005) studied 20 female subjects in an outpatient substance abuse rehabilitation program. Movement to music, rhythm interventions, and music games were used for music therapy interventions. The outcome variables focused on the effects of music
therapy and its effect on anxiety and anger. The study indicated that there was statistical significance for a decrease in anxiety and anger. Hwang & Oh (2013) studied 36 male subjects dealing with addiction. Singing, music listening, and playing instruments were utilized as music therapy interventions. The results indicated that a decrease in anger was statistically significant. Hammer (1996) studied subjects at an alcohol and dependency unit of a hospital. Music therapy intervention used was guided imagery. Focusing on the outcome variable of the effect on anxiety. The results indicated a statistically significant reduction in anxiety and stress levels. Baker et al. (2007) and Dingle et al. (2008) conducted studies with subjects dealing with addiction. Interventions utilized for music therapy were: lyric analysis, song writing, improvisation, listening, singing, and song recording. The results of these two studies indicated patients reporting a positive effect on mood and patients reporting a greater sense of group cohesion.

Mays, Clark, and Gordon (2008) published a systematic review of the use of music therapy in treatment of patients with addictions. The purpose of their study was to evaluate and describe evidence-based literature from 1967 to 2008 involving music therapy techniques with addiction counseling. Mays, Clark, and Gordon developed the following methods for their inclusion and exclusion of research. For the primary search, articles were gathered from an online database of Medline and PsycINFO from 1967 - 2006 using the key words: “addiction”, “substance related disorders”, “substance abuse”, “music”, and “music therapy” that could be found in either the title, subject, headings, or abstracts. Then articles were assessed to see if music therapy was evaluated or described for the treatment of addictions. The publications found in this initial search could be literature reviews, general descriptions, and general information on music therapy and
substance abuse (Mays et al., 2008). A secondary search was then conducted to look for additional sources of reports of music therapy for the treatment of addictions. This was done through a review of references in articles found from the first initial search. A hand search of articles focusing on music therapy for the treatment of addictions published in the Journal of Music Therapy (1991-2004) and Music Therapy Perspectives (1982-1984) was also completed. Books were examined to evaluate additional descriptions of music therapy. The authors then divided articles into categories: Music Therapy Descriptions, Music Therapy Studies, and Books Published- Music Therapy Descriptions. Each music therapy resource was compared against each other for music therapy interventions, characteristics of the therapy, program, and setting. Based on the search terms (addiction, substance related disorders, substance abuse, music, and music therapy) the researchers found 10,181 articles for music therapy and 44,088 articles on addiction. Of these articles, 83 mutually mentioned music therapy and addiction. Of these articles 19 described either music therapy (14) or music therapy studies (5). These five music therapy studies were compared (Mays et al., 2008). With only five published articles used for analysis there were no significant findings of the effects of music therapy with this population. As these researchers had predicted, the findings were ambiguous and no one study focused on the same variables assessed. Between the five articles, variables assessed focused on attendance, participation, client attitudes (two articles), and a visual analog mood scale. The researchers also determined that the duration of therapy and frequency of therapy was unspecified in three out of the five articles (Mays et al., 2008).
Through this systematic review this researcher will examine the clinical efficacy of music therapy in the field of addiction counseling. The purpose of this study is to continue where Mays et al. (2008) left off six years ago with their systematic review. Through this systematic review this researcher seeks to identify if further research in this area has been conducted and if research indicates through quantitative evidence that music therapy is a clinically efficient form of therapy for this population.

Design

In acknowledging both the necessity for intervention counseling in substance abuse and the possibility of music therapy’s unique ability to meet specific symptoms of this population it also important to understand the need and use of a systematic review. A systematic review methodically gathers research that focuses on a specific research question, evaluates these studies found, and comes to a final conclusion about the body of research (Hulley, Cummings, Browner, Grady, & Newman, 2007, pg. 214). Systematic reviews create a larger body of evidence by combining the studies, which can provide greater evidence-base to support or refute a research question. It also allows the researcher, who is collecting and analyzing these studies, and the readers of the systematic review to become an expert on the subject. Systematic reviews are considered an important scientific contribution as they can also be used for developing practice guidelines.

A meta-analysis is the statistical analysis of data gathered from the systematic review and can be conducted when a systematic review is conducted. However, a meta-analysis was not considered for the design of this study due to the articles’ quantities and
comparable content being dissimilar (i.e. designs of the studies vary greatly from one another, music therapy interventions utilized varied greatly, outcome variables differed greatly, and did not analyze data in the same manner). Hulley et al. (2007) describes the inappropriate use of Meta Analysis and further supports why a meta-analysis was not conducted for this systematic review.

“Combining the results of several studies is not appropriate if the studies differ in clinically important ways, such as the intervention, outcome, controls, blinding, and so on. It is also inappropriate to combine the findings if the results of the individual studies differ widely. Even if the methods used in the studies appear to be similar, the fact that the results vary markedly suggests that something important was different in the individual studies. This variability in the findings of the individual studies is called heterogeneity (and the study findings are said to be heterogeneous); if there is little variability, the study findings are said to be homogeneous.” (Hulley, S., Cummings, S., Browner, W., Grady, D., & Newman, T., 2007, pg.216)

METHODS

This researcher developed four focused web search terms replicating two of Mays et al. (2008) search terms (“music therapy and addiction”) and (“music therapy and substance abuse”) and adding two additional search terms (“music therapy and chemical dependency”) and (“music therapy and substance use”) to identify quantitative articles that had been published since 2008. These four separate search terms were investigated through Google Scholar web search and reviewed by this researcher first looking at title,
then abstract, then the full body of the article. These web searches yielded 6,612 articles (See Figure 1.0).

**Figure 1 Articles Identified Through Online Data Base Search**

These articles were then screened through the inclusion and exclusion criteria for this systematic review to meet study standards for comparison to the Mays et al. (2008) article. Inclusion criteria for this systematic review is more detailed then the Mays et al. (2008) article for the intended purpose of finding more relevant research. Similar
inclusion criteria to the Mays article inclusion criteria included: music therapy studies that included key words “addiction”, “substance abuse”, and “music therapy” that could be found in either the title, subject, headings, or abstracts. Articles in English that focused on music therapy and the treatment of addictions were also mentioned in Mays et al. (2008) inclusion criteria. Inclusion criteria for this study applies to all studies listed unless the topics of inclusion are conflicting (i.e. music therapy cannot be the primary and the secondary therapy).

The inclusion criteria were as follows: articles written within the last six years, articles including music therapy interventions, articles with music therapy as the primary therapy, articles that included music therapy as the secondary or co-therapy, articles that included addiction counseling, and articles in English.

The exclusion criteria were as follows: articles older than six years, articles not in English, articles that did not include music therapy, articles that did not include addiction, articles that included addiction as a secondary diagnosis (e.g. primary diagnosis being a mental disorder) and articles that did not have some level of measurement of quantitative data.

As databases and search engines have become more refined this researcher was curious if the timeframe included in Mays, Clark, and Gordon (2008) would yield a different number of articles then the number reported during the time the article was written. This researcher used the same search terms but expanded the search timeframe to Match Mays et al. (2008). The results yield three additional articles that were discovered outside the inclusion criteria for this systematic review but met Mays et al. (2008)
inclusion criteria (but were not included in their study). Due to the absence of these articles in the Mays et al. (2008) study this researcher thought it important to include them in the discussion section of this study.

Once these articles were screened against the inclusion and exclusion criteria eight articles were included for analysis. Articles were analyzed by employing the comparison chart used by Mays et al. (2008) to maintain continuity between systematic reviews as well as utilizing the CONSORT checklist, and the “Applying Levels of Evidence” chart developed by Silverman (2010) for study comparison. The CONSORT checklist and The “Applying Levels of Evidence” chart were used for analysis to examine whether the articles found through this systematic review not only had comparable content but that the content of the research upheld high quality and results of research could be considered of value in the research community.

The CONSORT checklist stands for Consolidated Standards of Reporting Trials. It was developed to alleviate problems arising from inadequate reporting from randomized controlled trials ("Welcome to the consort website", 2015). Due to the nature of this systematic review not all of the categories included in the CONSORT checklist were reviewed (See Appendix A). This researcher selected from the CONSORT list what she felt were the most prudent topics to review in the literature. For example, this researcher looked at interventions being specific enough for replication. The researcher felt this was important to include because further replications of these studies would help to support or refute the studies’ findings. Sections left out of the CONSORT checklist for this systematic review included: Participants, Sample Size, Results, Ancillary Analysis, Harms, and Discussion. In some cases the topics were just not applicable to the study; for
example the subject “Harms” and “Ancillary Analysis” were not mentioned in any of the articles analyzed. The other subjects of the CONSORT checklist were identified as important in research but for the purposes of this study were not included.

Items from the CONSORT checklist that were included for comparison are:

Specific objective/hypothesis stated, description of trial design, interventions specific enough for trial design, appropriateness of statistical methods, mention of effect size, and generalizability of trial findings. When reviewing the eight articles against CONSORT standards some of the subjects had basic requirements for meeting the standards. The articles either contained or did not contain: effect size, power estimate, confidence interval, description of trial findings, or stated specific hypothesis. Other subjects had more detailed qualifying data. For the subject “Interventions specific enough for replication” the CONSORT checklist defines this qualifier, as interventions mentioned in research should include mention of expertise of the interventionist administering the intervention as well as standardization of interventions. Interventions should be detailed in enough description that intervention can be replicated identically for future research. (Moher et al., 2010). “Appropriateness of statistical analysis” is described by the CONSORT checklist that the statistical analysis must, “Describe statistical methods with enough detail to enable a knowledgeable reader with access to the original data to verify the reported results” (Moher et al., 2010). Lastly, the subject, “Generalizability of findings” is cited in the CONSORT explanation that, “External validity is a matter of judgment and depends on the characteristics of the participants included in the trial, the trial setting, the treatment regimens tested, and the outcomes assessed.” (Moher et al., 2010)
The third tool utilized for study comparison was the “Applying Levels of Evidence Chart” developed by Silverman (2010). In Silverman’s article he outlines that the identification, synthesis, and application of evidence-based research is becoming more important. He further explains the importance of understanding levels of research in medical fields as the quality of articles varies (Silverman, 2010, pg.1). Each identified researcher developed a hierarchy and grading system for comparing evidence-based research by attributing numeric values to levels of research (i.e. “I” being the highest ranked and “IV” being the lowest ranked in research.) Researchers whose hierarchies were utilized for comparison were: Harris et al. (2001), Melnyk and Fineout-Overholt (2005), Rubin (2008), and Salmond (2007) The following are the levels explained for purpose of defining what levels were relevant to the studies obtained for this systematic review (see Table 3.0). Level I for Harris et al. (2001) included research that contained evidence obtained from a properly randomized control trial (Silverman, 2010, pg.3). Level I research for Melnyk and Fineout-Overholt (2005) included evidence from a systematic review or meta-analysis of all randomized control trial or evidence-based clinical guidelines based on a systematic review (Silverman, 2010, pg.3). Level I research for Rubin (2008) included systematic reviews or meta-analysis (Silverman, 2010, pg.3). Level I evidence for Salmond (2007) included systematic reviews. Level II for Harris et al. (2001) hierarchy includes, “Evidence obtained from well-designed controlled trial without randomization; evidence obtained from well-designed cohort or case–control analytic studies, preferably from more than one center or research group; evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of the introduction of penicillin treatment in
the 1940s) could also be regarded as this type of evidence” (Silverman, 2010, pg.3).


RESULTS

In first comparing the articles found from 2008 to present against the Mays et al. (2008) table, this researcher noticed similarities to Mays et al.’s (2008) findings. Many of the settings, study designs, interventions used, and outcome variables varied greatly (see Table 1.0). While all of the Silverman articles (Silverman, 2009, 2011a, 2011b, 2012) focused on the outcome variable being clients’ readiness to change, the focus of the studies by Albornoz (2010) and Hwang & Oh (2013) was on a decrease of anxiety/depression or mood regulation. In contrast, Dingle et al. (2008) and Gardstrom et al. (2013) focused on patient perceived effect on mood and participation. In all of the included studies, music therapy was found to have a positive effect (i.e. statistical significance and/or higher mean scores) on at least one of following measures: patients’ readiness to change, anxiety, depression, or patients’ perceived positive effect.
<table>
<thead>
<tr>
<th>Citation</th>
<th>Setting</th>
<th>Sample</th>
<th>Study Design</th>
<th>Therapeutic Music Intervention/Predictor Variable(s)</th>
<th>Outcome Variable</th>
<th>Results</th>
<th>Comments</th>
<th>Interven-tionist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silverman, M. (2011a) (1)</td>
<td>Inpatient Detoxification Unit-University Hospital</td>
<td>141 Ss 59 female</td>
<td>Randomized Three Group Design, post-test only= Verbal Therapy, Recreational Therapy, and Music Therapy</td>
<td>“Rockumentary” Music Therapy (e.g Therapist would discuss musicians biography and past addiction lifestyle and pair with Lyric Analysis and singing.)</td>
<td>The Readiness to Change Questionnaire Tx version (RTCQ-TV)</td>
<td>Contemplation Scores for MT Group A: (p&lt;.0001) and Group C: (P&lt;.007) Action Scores for MT-Group C(p &lt; .05)</td>
<td>Same interventionist for all three groups.</td>
<td>MT</td>
</tr>
<tr>
<td>Silverman, M. (2009) (2)</td>
<td>Inpatient Detoxification Unit - Hospital</td>
<td>66 Ss 36 female</td>
<td>Two Group, Post-Test Only</td>
<td>Lyric Analysis</td>
<td>The Stages of Change Readiness (SOCRATES) and Treatment Eagerness Scale</td>
<td>No significant statistical findings but researcher notes: experimental group tended to have higher mean ratings of taking steps, recognition, and total SOCRATES scores (Silverman, 2009, pg.117)</td>
<td>This is the first study of its kind. Further research would need to be done.</td>
<td>MT</td>
</tr>
</tbody>
</table>

**Table 1- Continued**
Table 1 - Continued

<table>
<thead>
<tr>
<th>Study</th>
<th>Setting</th>
<th>Participants</th>
<th>Design</th>
<th>Outcome Measures</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Silverman, M. (2011b) (3)</td>
<td>Inpatient Detoxification Unit- Hospital</td>
<td>140 Ss 70 female</td>
<td>Randomized Two Group, Post-Test and Follow up</td>
<td>Song Writing Change Readiness, Depression, &amp; Treatment perceptions: The University of Rhode Island Change Assessment and The Beck Depression Inventory Survey.</td>
<td>No significant differences between groups Depression- No significant differences TX perceptions- (p&lt;.001) Higher in the experimental section.</td>
</tr>
<tr>
<td>Albornoz, Y. (2010) (4)</td>
<td>Rehab Hospital in Venezuela: Fundacion Jose Felix Ribas</td>
<td>24 Ss All Male</td>
<td>Randomized Two group, Pre-Test/Post-test</td>
<td>Percussion Improvisation Hamilton Rating Scale for Depression and The Beck Depression Inventory.</td>
<td>No statistical significance between experimental and control groups for either HRSD or BDI (p&gt;.05).</td>
</tr>
</tbody>
</table>

Findings indicate that depression and change in a detoxification unit are not effected significantly more by MT compared to Talk.
<table>
<thead>
<tr>
<th>Table 1- Continued</th>
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<tbody>
<tr>
<td><strong>Dingle et al. (2008) (6)</strong></td>
</tr>
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</table>
Table 1- Continued

<table>
<thead>
<tr>
<th>Study</th>
<th>Intervention</th>
<th>Sample Size</th>
<th>Methodology</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gardstrom et al. (2013) (7)</td>
<td>Residential Treatment Facility-Program for Individuals with Substance Abuse</td>
<td>89 Surveys</td>
<td>Survey</td>
<td>Composition, recreation, receptive listening, and improvisation.</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>Measure of PANAS-X was used to measure Negative Affect</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Anxiety: 51% self reported decrease</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Anger: 42.9% self reported decrease</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Sadness: 65% reported decrease</td>
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<td></td>
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<td></td>
<td></td>
<td>The individuals who held the sessions also administered the surveys giving way to possible bias on the participants part.</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>MT &amp; SMT</td>
</tr>
<tr>
<td>Hwang, E. &amp; Oh, S. (2013)(8)</td>
<td>Seoul Metropolitan Eunpyeong Hospital</td>
<td>36 Ss All Male</td>
<td>Pre/post 10 pt. likert scale.</td>
<td>Anger- p&lt;.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Anxiety- No significant differences</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Stress- p&lt;.01</td>
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<td></td>
<td></td>
<td></td>
<td>Depression- p&lt;.01</td>
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<td>MT</td>
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</tbody>
</table>
As stated above, the CONSORT checklist is an important tool in analyzing inadequate reporting in randomized control trials. In comparing the eight studies to items taken from the CONSORT checklist (See Table 2.0) all of the studies specifically stated a hypothesis or objective. Seventy five percent of the articles provided a detailed description of the trial design. All of the articles included interventions that were specific enough for replication. Eighty seven percent of the articles included appropriate statistical methods and analysis. Twenty five percent of the articles included a mention of effect size, power estimate, and/or confidence interval. None of the included articles had generalizability for trial findings.
<table>
<thead>
<tr>
<th>Articles</th>
<th>Specific Objective/Hypothesis Stated?</th>
<th>Description of trial design</th>
<th>Interventions specific enough for replication?</th>
<th>Appropriateness of statistical methods/analysis.</th>
<th>Mention of Effect Size, Power Estimate, and Confidence Interval.</th>
<th>Generalizability for the trial findings *</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alborno et al. (2010)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>0</td>
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<tr>
<td>Dingle et al. (2008)</td>
<td>X</td>
<td>0</td>
<td>X</td>
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Table 2 - Continued

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<th>Gardström et al. (2013)</th>
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<th>X</th>
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<tr>
<td>Hwang &amp; Oh (2013)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Silverman (2009)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Silverman (2011) (a)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Silverman (2011) (b)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Silverman, M. (2012)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8/8</td>
<td>6/8</td>
<td>8/8</td>
<td>7/8</td>
<td>2/8</td>
<td>0/8</td>
</tr>
</tbody>
</table>

An “X” Indicates the article met Consort Checklist Criteria

A “0” indicates a Did Not meet Consort Checklist Criteria

*: Mention of Standard Error
In comparing the articles against Silverman’s Levels of Evidence (See Table 3.0) the following were the results. Harris et al. (2001), Melnyk and Fineout-Overholt (2005), Rubin (2008), and Salmond (2007) each identified a hierarchy and grading system for comparing evidence-based research by attributing numeric values to levels of research i.e. “I” being the highest ranked and “IV” being the lowest ranked in research (see Table 3.0).

**Table 3 Levels of Evidence as Presented by Silverman (2010)**

<table>
<thead>
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<tbody>
<tr>
<td><strong>Level I</strong></td>
<td>Evidence obtained from a properly randomized control trial</td>
<td>Evidence from a systematic review or meta-analysis of all randomized controlled trial or evidenced-based clinical guidelines based on a systematic review</td>
<td>Systematic reviews or meta-analysis</td>
<td>Systematic reviews</td>
</tr>
<tr>
<td>Level II Evidence obtained from well-designed controlled trial without randomization; evidence obtained from well-designed cohort or case–control analytic studies, preferably from more than one center or research group; evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of the introduction of penicillin treatment in the 1940s) could also be regarded as this type of evidence</td>
<td>Articles that included well-designed randomized controlled trials</td>
<td>Multi-site replicated randomized control trials</td>
<td>Randomized controlled trials</td>
<td></td>
</tr>
</tbody>
</table>
As shown (See Table 4.0 and Figure 2.0) half of the articles met the highest ranked standard according to Harris et al. (2001). Half of the articles met level II standards for Melnyk and Fineout-Overholt (2005), Harris et al. (2001), and Salmond (2007). Half of the articles met level III standards for Rubin (2008) and Melnyk & Fineout-Overholt (2005). Half of the articles met level IV standards for Rubin (2008) and Salmond (2007) standards, which is the lowest in the hierarchy.
Table 4  Levels of Evidence of Articles Compared Against Hierarchy

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Albornoz</td>
<td>II.</td>
<td>II.</td>
<td>III.</td>
<td>II.</td>
</tr>
<tr>
<td>Dingle</td>
<td>II.</td>
<td>III.</td>
<td>IV.</td>
<td>IV.</td>
</tr>
<tr>
<td>Gardstrom</td>
<td>II.</td>
<td>III.</td>
<td>IV.</td>
<td>IV.</td>
</tr>
<tr>
<td>Hwang</td>
<td>II.</td>
<td>III.</td>
<td>IV.</td>
<td>IV.</td>
</tr>
<tr>
<td>Silverman (2009)</td>
<td>II.</td>
<td>III.</td>
<td>IV.</td>
<td>IV.</td>
</tr>
<tr>
<td>Silverman (2011) (1)</td>
<td>I.</td>
<td>II.</td>
<td>III.</td>
<td>II.</td>
</tr>
<tr>
<td>Silverman (2011) (2)</td>
<td>I.</td>
<td>II.</td>
<td>III.</td>
<td>II.</td>
</tr>
<tr>
<td>Silverman (2012)</td>
<td>I.</td>
<td>II.</td>
<td>III.</td>
<td>II.</td>
</tr>
</tbody>
</table>
This author applied the criteria established by the researchers identified above to the eight articles reviewed for this study. Interestingly those criteria yielded results such that each author used no more than two levels of evidence across the eight articles.

**DISCUSSION**

The literature found through this systematic review was a small aggregate of articles on music therapy and addiction counseling. In reviewing research over the past six years, the results yielded a small sum of articles (eight articles in total) that met the inclusion criteria. It is important to note that while conducting the search for articles this researcher was curious to see if a search that included the timeframe used in the Mays et al. (2008) articles would yield different outcomes that were not found at the time the article was written. In doing an initial search of articles within the included timeframe of Mays et al. (2008) three articles were found that met the inclusion criteria for Mays et al. (2008) but were not included in the study for final analysis. The three articles (Hammer
(1996), Baker et al. (2007), and Cevasco (2005) that were found were not included for analysis of this systematic review due to their timeframes not meeting the inclusion criteria. However these studies should be noted as important contributions to the field of music therapy and this population.

In reviewing those eight articles four looked into the clients’ readiness to change, while four of the articles focused on anxiety, anger, and depression. All of the studies examined group counseling and music therapy as opposed to individual sessions. The duration and frequency of sessions in the studies was assorted or undetermined. The size of the groups studied in these articles as well as the gender varied significantly with the largest group of subjects being 141 and the smallest sample pool being 24 subjects. One study (8) studied only men, which brings up an issue of generalization. In eight of the studies a music therapist conducted the music therapy interventions.

In compiling this systematic review this researcher wanted to have similarities between this study and the Mays et al. (2008) systematic review. To maintain continuity between studies this researcher used similar search terms to the Mays et al. study (2008). Also to maintain continuity between studies this researcher used the comparison table from the Mays et al. (2008) that was applied in reviewing articles from 1967-2008.

Unlike the Mays et al. (2008) study the manner at which this researcher searched for articles was only on a online search engine. In the Mays et al. (2008) study articles were found through both hand search and online databases. This could be attributed to the limitation of some articles not being digitally archived (e.g. the Journal of Music Therapy that was hand searched in the Mays et al. (2008) study could not have been accessed in 2008 digitally). This researcher found that more articles were found using web based
search engines only. Also unlike Mays, Clark, and Gordon the inclusion and exclusion criteria for this study was more detailed. Mays et al. (2008) included for the study articles that were “Music Therapy Studies” as opposed to music therapy descriptions relating to addiction counseling. This researcher more clearly defined those terms as listed above. Lastly, this researcher applied three tools for analysis comparison for articles as opposed to one (the comparison chart). Through these tools this researcher was able to not only compare the content of the articles but also compare the quality of the research being presented.

Much like the Mays et al. (2008) findings, the current review found that no study investigated reduction of drug and alcohol consumption or the ability of music therapy to maintain abstinence for sober individuals (Mays et al., 2008).

Unlike Mays et al. (2008), this researcher found that more research was properly randomized (e.g. in random assignment of subjects) and included music therapy as an independent therapy, not just an additive therapy. Articles from this systematic review maintained an acceptable level of standard as it relates to reliable quantitative experimental content (e.g. comparing studies against the CONSORT checklist standards.) Articles also had more consistencies in what variable were being assessed. For example, articles 3, 5, 6, and 7 included interventions of songwriting with this population, while some (4,6,7,8) included improvisation, and still others (7) utilized music listening with this population. Consistencies also existed in study design. Six of the articles (1,2,3,5,6, &7) used posttest only designs and two of the articles (4&8) utilized a pre-test/ posttest designs.
Limitations of Studies Presented

Of all limitations identified within these studies, the main limitation in all of the studies was the design and structure of the research. Often the researcher conducting the study was also the music therapist conducting the interventions and collecting the data. This raises the concern of possible procedural or response bias in data presented. Lastly, only two articles mentioned effect size, power, or confidence interval. Many medical journals require that manuscripts submitted for publication contain effect size, power, and confidence intervals. Since none of the articles mentioned standard error, it is difficult to ascertain if the information in these articles could be generalized to the broader population. A small standard error indicates a more accurate portrayal of the actual population mean (Startips, 2015).

Limitations of This Study

Although research for this study was extensive, there is always a possibility that references were not found.

This systematic review sought to answer two questions: Has further research been conducted since the Mays et al. (2008) study? Does the research present enough qualitative evidence to support music therapy as a clinically efficient form of therapy for individuals who deal with substance abuse? To examine the first question, the quantity and the quality of the published research for music therapy and addiction counseling has improved since the (2008) article. In the Mays et al. (2008) study they were only able to find five studies that met inclusion criteria in 2008. Also articles that were found had differing variables that were assessed. One of the articles looking at attendance, two articles focusing on music therapy and client attitudes towards treatment, one articles
focusing on participation, and one article focusing on mood. Since 2008 this
systematic review has identified eight articles that fit inclusion criteria. That is three more
than the Mays study. Also the content of variables assessed included more substantial
research in focusing on patients’ readiness to change and assessing the decrease of
anxiety, depression, and anger with music therapy and this population. In examining the
second research question, it is recommended that more research be conducted in the area
of music therapy and addiction counseling to expand and validate music therapy as a
clinically efficient form of therapy for this population. Although the current research in
the field of music therapy and this population has improved since 2008, there is not
enough research to claim music therapy as a valid treatment approach with this
population. More studies need to be conducted to assess matching variables, with the
identical interventions, and similar subject pools. It is recommended that the research
carried out be appropriately randomized with a large and diverse subject sample pool. The
research should be able to uphold the current standards of medical research with focus on
effect size, confidence intervals, and power. Further research and replicated research
should be conducted to further examine music therapy as a valid and reliable form of
therapy with this population.
### CONSORT 2010 checklist of information to include when reporting a randomised trial

<table>
<thead>
<tr>
<th>Section/Topic</th>
<th>Item</th>
<th>Checklist Item</th>
<th>Reported on page No</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Title and abstract</strong></td>
<td>1a</td>
<td>Identification as a randomised trial in the title</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1b</td>
<td>Structured summary of trial design, methods, results, and conclusions (for specific guidance see CONSORT for abstracts)</td>
<td></td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td>2a</td>
<td>Scientific background and explanation of rationale</td>
<td></td>
</tr>
<tr>
<td></td>
<td>2b</td>
<td>Specific objectives or hypotheses</td>
<td></td>
</tr>
<tr>
<td><strong>Methods</strong></td>
<td>3a</td>
<td>Description of trial design (such as parallel, factorial) including allocation ratio</td>
<td></td>
</tr>
<tr>
<td></td>
<td>3b</td>
<td>Important changes to methods after trial commencement (such as eligibility criteria), with reasons</td>
<td></td>
</tr>
<tr>
<td><strong>Participants</strong></td>
<td>4a</td>
<td>Eligibility criteria for participants</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4b</td>
<td>Settings and locations where the data were collected</td>
<td></td>
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<tr>
<td><strong>Interventions</strong></td>
<td>5</td>
<td>The interventions for each group with sufficient details to allow replication, including how and when they were actually administered</td>
<td></td>
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<tr>
<td><strong>Outcomes</strong></td>
<td>6a</td>
<td>Completely defined pre-specified primary and secondary outcome measures, including how and when they were assessed</td>
<td></td>
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<tr>
<td></td>
<td>6b</td>
<td>Any changes to trial outcomes after the trial commenced, with reasons</td>
<td></td>
</tr>
<tr>
<td><strong>Sample size</strong></td>
<td>7a</td>
<td>How sample size was determined</td>
<td></td>
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<tr>
<td></td>
<td>7b</td>
<td>When applicable, explanation of any interim analyses and stopping guidelines</td>
<td></td>
</tr>
<tr>
<td><strong>Randomisation:</strong></td>
<td>8a</td>
<td>Method used to generate the random allocation sequence</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8b</td>
<td>Type of randomisation; details of any restriction (such as blocking and block size)</td>
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<tr>
<td><strong>Allocation</strong></td>
<td>9</td>
<td>Mechanism used to implement the random allocation sequence (such as sequentially numbered containers), describing any steps taken to conceal the sequence until interventions were assigned</td>
<td></td>
</tr>
<tr>
<td><strong>Blinding</strong></td>
<td>11a</td>
<td>If done, who was blinded after assignment to interventions (for example, participants, care providers, those</td>
<td></td>
</tr>
</tbody>
</table>
assessing outcomes) and how

11b If relevant, description of the similarity of interventions

Statistical methods
12a Statistical methods used to compare groups for primary and secondary outcomes
12b Methods for additional analyses, such as subgroup analyses and adjusted analyses

Results
Participant flow (a diagram is strongly recommended)
13a For each group, the numbers of participants who were randomly assigned, received intended treatment, and were analysed for the primary outcome
13b For each group, losses and exclusions after randomisation, together with reasons

Recruitment
14a Dates defining the periods of recruitment and follow-up
14b Why the trial ended or was stopped

Baseline data
15 A table showing baseline demographic and clinical characteristics for each group

Numbers analysed
16 For each group, number of participants (denominator) included in each analysis and whether the analysis was by original assigned groups

Outcomes and estimation
17a For each primary and secondary outcome, results for each group, and the estimated effect size and its precision (such as 95% confidence interval)
17b For binary outcomes, presentation of both absolute and relative effect sizes is recommended

Ancillary analyses
18 Results of any other analyses performed, including subgroup analyses and adjusted analyses, distinguishing pre-specified from exploratory

Harms
19 All important harms or unintended effects in each group (for specific guidance see CONSORT for harms)

Discussion
Limitations
20 Trial limitations, addressing sources of potential bias, imprecision, and, if relevant, multiplicity of analyses

Generalisability
21 Generalisability (external validity, applicability) of the trial findings

Interpretation
22 Interpretation consistent with results, balancing benefits and harms, and considering other relevant evidence

Other information
Registration
23 Registration number and name of trial registry

Protocol
24 Where the full trial protocol can be accessed, if available

Funding
25 Sources of funding and other support (such as supply of drugs), role of funders

*We strongly recommend reading this statement in conjunction with the CONSORT 2010 Explanation and Elaboration for important clarifications on all the items. If relevant, we also recommend reading CONSORT extensions for cluster randomised trials, non-inferiority and equivalence trials, non-pharmaceutical treatments, herbal interventions, and pragmatic trials. Additional extensions are forthcoming. For those and for up to date references relevant to this checklist, see www.consort-statement.org.*
REFERENCES


