Derleme/Review

T.C SAĞLIK BAKANLIĞI
Sağlık Hizmetleri Genel Müdürlüğü
GETAT Daire Başkanlığı

Anadolu Tıbbı Dergisi

ISSN: 2822-3373 https:// anadolutibbidergisi.saglik.gov.tr Yıl/Year: 2022 Aralık/December Sayı/Issue:3 Bakanlık Yayın No:1230

DISTINGUISHING TYPE OF MUSIC-BASED INTERVENTIONS IN CLINICAL RESEARCH AND IMPROVING THE QUALITY OF REPORTING

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ABSTRACT

Music-based interventions have been utilized to address a wide array of health issues and symptoms for patients in many different clinical settings. This growing body of research surrounding the use of music-based interventions is due to the acceptability, accessibility, and versatility of music-based interventions with patients across the lifespan. Further, this has fostered an increasing number of researchers from diverse disciplines to engage in examining the use of music-based interventions to meet patient needs. As a result, there is a need for clear, accurate, and detailed descriptions when reporting music-based interventions. Thorough descriptions of music-based interventions ensure there is an understanding of how the music was implemented in the study, provides sufficient information for future researchers to replicate a study, and provides a clear description of the protocol to allow researchers and clinicians to determine how to tailor and adapt the intervention for the clinical environment. This article provides descriptions of the different types of music-based interventions and a rationale for, and the benefit of, providing accurate and detailed narratives of the intervention. Suggesting guidelines for reporting music-based interventions will be reviewed and four different music-based intervention studies will be analyzed and reviewed utilizing these suggested guidelines.

Keywords: music-based interventions, reporting guidelines, music listening, music therapy.

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DOI No: 10.5505/anadolutd.2022.24633
Geliş Tarihi/Received: 08/10/2022 Kabul Tarihi/Accepted: 25/11/2022

Introduction

The body of literature surrounding music-based interventions has grown exponentially in the recent years. This is due to numerous factors impacting the use of music-based interventions in research: accessible nature of music (1,2), wide variety of clinical settings in which they are being utilized (1), the myriad of health issues and symptoms being addressed (1-3), different ways that music is utilized (3-7), diverse body of disciplines employing and investigating these types of interventions (3), and the increasing amount of research funding dedicated to music intervention research (2). The combination of all these factors, in addition to the growing use of music-based interventions research around the world, necessitate clarity in describing the music-based intervention to understand and consider the unique and specialized needs of patients (1), as well as any cultural implications related to selecting music (2).

Further, research organizations and funding agencies (8-10), advocate and encourage researchers to provide a detailed description of the study protocol while it is ongoing. This gives access to information about the study to other researchers prior to study completion and publication of outcomes and results. Access to this detailed information in real-time through published study protocols or outcomes following study completion, benefit from integrating clear and transparent reporting guidelines in music-based intervention research (11) to support, strengthen, and advance this research. The purpose of this paper is to define the different types of music interventions, review proposed reporting guidelines, and illustrate the application of the reporting guidelines on four unique music-based intervention studies from the current body of literature. Recommendations for reporting music-interventions for future publications is also discussed and how providing clear and detailed information about music-based interventions will help to advance this line of research and improve patient care.

Music-based interventions in research

In recent years, the body of literature implementing music-based interventions has increased significantly. A recent search of music-based intervention publications in PubMed resulted in 23,478 citations between 2000-2021, while 16,523 occurred between 2011-2021(12). This demonstrates a 238% increase in music-based intervention research citations in the past decade. The Cochrane Library, which is a database of systematic reviews, contains 61 Cochrane Reviews and 4 Cochrane Protocols analyzing a total of 5,161 trials that included music-based intervention research (12). This increasing number of meta-analyses and systematic reviews also represent the impact of music-based interventions on addressing various patient needs. Music-based interventions have been implemented with patients across the lifespan and have been utilized to address a wide variety of symptoms such as insomnia, anxiety, stress, depression, and pain (3-13-32).

Music-based interventions include the integration of music in many different forms.

These include listening, singing, playing, improvising or composing music (3,6,7). While some of these methods require specialized training and specific equipment to facilitate, some methods are easily accessible and can be self-administered by patients (1,2). A recent narrative and systematic review of reporting music-based interventions indicated that in terminology and content reporting, describing the intervention was inconsistent or misapplied (1,3,44).

Robb et al. reported that of the 187 articles reviewed that 51 different terms were utilized to describe the music-based intervention. The terms most frequently utilized included music therapy, music intervention, music listening and music medicine. Analysis of the study intervention terminology was inconsistent and often misapplied or inaccurate (3). The inaccurate use of terminology includes the use of term music therapy to refer to a music-based intervention

implemented by a registered nurse (5). In a recent response to the misapplied use of the term music therapy to refer to a music listening intervention, clinical care nurse authors nurses rejected the use of the term music medicine, which is a term utilized to refer to a music intervention that can be self-administered by the patient or may be implemented by a healthcare professional not trained as a music therapist. Their rationale against the term music medicine is that nurses do not practice medicine as a result this term was not appropriate for use (5). Overall, the lack of clarity and inaccurate use terminology in reporting music-based interventions impedes developing a clear understanding of the study and generating meaningful interpretations.

Defining music-based interventions

Music-based interventions integrate the use of music in many different ways. Due to the various ways a patient can experience music (listen, sing, play, compose and improvise) and the diverse disciplines conducting music-based intervention research, it is important to utilize clear and consistent terminology in describing the intervention. The professional background and training of the study interventionist is key a factor that impacts the type of music-based intervention utilized. For example, music therapists are trained to understand the functions and nuances of music as a therapeutic modality and how it influences clinical outcomes (31). As a result, a music therapist is versed at engaging patients in listening, playing, singing, composing, and improvising music. Whereas, a nurse or other healthcare professional possesses knowledge specific to assessment, identification, and understanding health issues and symptoms that music-based interventions may help to address. The type of music-based intervention being implemented is dependent upon the composition of the research team and the specific knowledge and skills of the study interventionist.

In order to distinguish the types of music-based interventions, clear terminology is needed to define and differentiate these interventions. Table 1 includes terms and descriptions of three different types of music-based interventions (44). Music therapy is consistently defined by professional music therapy organizations around the world, by its use of music to address the needs of a patient identified through an assessment and facilitating interventions within the context of a therapeutic relationship. The education and training required to be credentialed as a professional music therapist varies from country to country, and while these training requirements may vary, definitions of music therapy remain consistent with the defining features of a formal assessment process and the client-therapist relationship as foundational of the music therapy process (6,7).

Music therapy	Music listening	Music making
Use of music within the context of a therapeutic relationship to address and promote the patient's health and wellbeing by a professional trained as a music therapist. Music therapists are trained to use music therapeutically through listening, singing, playing, composing, and improvising(5,6).	Listening to music that is self-selected by the patient or that has been pre-selected by a healthcare provider, researcher, is made available in the clinical environment, or from the patient's own music library or streaming platform(1).	Engagement in a group or ensemble that involves singing or playing music for the sake or opportunity to participate. Music making refers to active ways that patients engage in making music and include singing and playing instruments (i.e. group drumming, etc.)

Table.1. Types of music-based interventions

Clear distinctions in the terms that describe the different types of music-based interventions is necessary to begin to develop consistency in the reporting of music-interventions. This has been a challenge for many years due to the varied and use of ambiguous and inaccurate terms to describe study interventions. Detailed reporting of research interventions is crucial for interpretation, replication, synthesis, and translation of research interventions and outcomes. Consolidated Standards for Reporting Trials (CONSORT) and Transparent Reporting of Evaluations with Non-randomized Designs (TREND) provide statements and checklists to improve the quality and clarity of research reporting (33-35).

Proposed reporting guidelines for music-based interventions

The complex nature of music and music-based interventions can be challenging to clearly, fully, and transparently describe. There are many factors

to consider that are unique to music in comparison to other non-pharmacological treatment modalities. These include choice of music, method of music delivery, dosage, and even combing music with other treatment interventions (i.e., music and imagery). The need for greater clarity and transparency in reporting music-based interventions fostered *Reporting Guidelines for Music-based Interventions* (11). These guidelines are based on CONSORT and TREND statements and provide recommendations for details that ensure specific and transparent reporting (9,33-35). These reporting guidelines suggest detailed information about each aspect of the music-based intervention including: theory or rationale for the use of music, specifics about intervention content, how the intervention is delivered, qualifications of the interventionist, treatment fidelity, setting, and unit of delivery. The 7-item checklist and a description of each item is provided in Table 2.

Music-based intervention reporting criteria	Description
Intervention theory	A rationale for the music that has been selected for the study, detailing how the qualities of the music and method of delivery are expected to target study outcomes.
Intervention content	Clear details about the music intervention, including specifics regarding how the intervention may be tailored. Details should include: ▪ Who selected the music? Pre-selected by investigator? Participant selected from limited set? Participant selected from their personal library? Patient preferred based on an assessment? ▪ Type of music: Live, recorded, original, music with nature sounds, music with guided imagery, etc. Describe musical form, structure, elements, and instrumentation. ▪ Describe materials needed for music intervention, such as equipment needed for listening, or instruments utilized. ▪ Specify the type of music-based intervention; such as music listening group drumming, song discussion, songwriting, improvisation, singing, etc.
Intervention delivery	Provide detailed information regarding the number of sessions, length of sessions, and session frequency.
Interventionist	Specify who is facilitating the intervention; include qualifications, credentials, and how many interventionist engaged in delivering study conditions.
Treatment fidelity	Explain in detail how treatment and control conditions were provided consistently throughout the study (specify manualized protocols, training of interventionist, and intervention monitoring).
Setting	Describe where the study intervention occurred; specify location, description of environment, privacy level and ambient sound.
Unit of delivery	Provide specific information regarding whether the intervention was delivered to individual patients or groups, detailing the size of the group.

Table.2. Guidelines for reporting music-based interventions

Review of music-based intervention studies utilizing reporting guidelines

The growing use of music-based interventions in research, as well as the many different ways that music can be implemented as an intervention provide a strong rationale for providing detailed information about the intervention. A recent systematic review on the reporting quality of music intervention research indicates that overall reporting quality was poor, with less than 50% of studies providing information for four of the seven components on the checklist. Reporting content was also poor with less than 50% including detailed information describing the music utilized, volume levels or controls, or materials. Additionally, the terminology utilized to describe the type of music intervention was varied and inconsistent (3).

Table 3 includes an examination of four music-based interventions, which include patient-directed music listening with mechanically ventilated patients, music listening with oncology staff, group drumming with mental health users, and guided imagery and music with refugees. These recent publications illustrate the use of music-based interventions in diverse contexts, the theory or rationale for the use of music, different disciplines serving as interventions in this area of research, and the various ways of engaging with music. The studies were reviewed and analyzed using the *Reporting Guidelines for Music-based Interventions* (33) and do not report or present study outcomes. The review of each publication in Table 3 includes the information for each of the seven items on the reporting guidelines checklist (33) based on the information included in the published manuscript. When information was not provided for any item on the checklist, it is identified in Table 3 as not reported.

Publication citation in reference list	Theory	Content	Delivery	Interventionist	Treatment Fidelity	Setting	Unit of Delivery
37	Decrease anxiety, manage discomfort, based on patient-controlled analgesia	Board-certified music therapist (MT-BC) conducted assessment of patient music preferences, provided patient preferred recorded music, noise cancelling headphones, patient's chose the music they wanted to listen to, when and how long. 60-80 bpm	Enrolled in study for length of MV up to 30 days, patient determined frequency and length of listening sessions	MT-BC conducted assessment, provided music, and met with patients daily regarding their experience with the music listening intervention, only one MT-BC engaged with all music study participants	Treatment fidelity checklist developed and followed for each group to ensure consistency of intervention delivery (i.e., equipment functioning properly, patient access to equipment	12 different ICUs, individual rooms doors closed to minimize sound	Individual
38	Music to manage stress and anxiety and reduce symptoms associated with burnout	Music Care™ program utilized, created by a music therapist. Music listening sessions included music styles: classical, jazz, world music, blues, folk, classic rock, and new age or original compositions	Session 20-60 minutes, streamed via headphones, participants choose music based on selections provided. Frequency limited to one time per day.	Background of researchers not provided. Music listening sessions were self-determined and guided by study participant.	Not reported.	Oncology unit, listened in break room, as well as outside work hours, location determined by study participant.	Individual
39	Inclusive nature of drum circles and health benefits of music making	Participants taught basics of how to play a drum and engaged in call and response exercises, learned to play rhythmic patterns, and free improvisation	90-minute group drumming sessions over 10 weeks	Professional drummer with experience leading community music activities and supported by three music students from local music college	Not specifically reported. Only one interventionist utilized in the study.	Community space rented	Group
40	Music listening and supportive guiding of music therapist to help regulate arousal and contain fragmented emotions and trauma experiences	Receptive music therapy method of Guided Imagery and Music (GIM), utilizing special selection of classical music to evoke spontaneous imagery	60-minute weekly sessions over the course of 16 weeks	Music therapists (MTs)trained in GIM; translators utilized to communicate in sessions. It is not clear how many MTs served as interventionists.	Specific and clear details provided on how the method was adapted for study participants. Ten item check list provided, as well as description about study adherence.	Trauma Clinic for Refugees	Individual

Table.3. Illustration of application of the reporting guidelines for music-based intervention studies

The review of these four publications provided better reporting quality than the systemic review that reported overall poor reporting quality (32). Across the seven items these four studies provided clear and detailed information overall, only lacking clarity or missing specifics in one or two items in the checklist, typically related to the study interventionists and treatment fidelity. Providing detailed information about music-based intervention ensures that the research reporting aligns with standards on reporting such as CONSORT and TREND (34-36).

Conclusion

The volume of music-based intervention studies indicates the growing use of music-based interventions in a wide array of contexts to address many different areas of need. The accessible nature of music and music-based interventions make them a viable resource and tool. Systematic reviews of music-based interventions have also demonstrated the symptoms and therapeutic needs they most effectively address to date. While this body of literature is growing, it has severely lacked in the quality of reporting clear and detailed information about the intervention. Providing specific descriptions about each facet of the music intervention ensures other researchers have an accurate understanding of the type of intervention, that transparent and detailed information is provided to help the reader know why and how music was selected for the study, and foster replicability and translation of the intervention into clinical practice. Integrating consistent terminology and reporting criteria for music-based interventions not only helps to align with reporting guidelines for intervention studies in medicine, behavioral, and social sciences, it also aids in advancing this body of literature as researchers explore the use of these interventions in new clinical contexts.

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