



## Section 3. Life sciences

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### A REVIEW OF HARP THERAPY AND GENDER DEMOGRAPHICS ANALYSIS IN PUBLISHED STUDIES

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#### Abstract

Harp therapy has been proven to help patients with pain and stress relief, the improvement of the pregnancy rate of reproductive medicine, the weight gain in newborns, and the palliative care for the terminally ill or dying ones. This article reviewed the application field of harp therapy, the music utilized during treatment, and the available training programs for harp therapy. Furthermore, the gender demographics of published studies were analyzed. The psychophysiological responses from different genders need to be investigated in future studies.

**Keywords:** Harp Therapy, Music Therapy, Gender Difference, Sex Bias, Pain and Stress

#### Introduction

Vibroacoustic therapy (VAT) was developed in Norway by Dr. Olav Skille in the 1980s (SKILLE, 1989). The vibration at low-frequency tones (30 Hz to 120 Hz) that penetrates the body was combined with music for therapy, which could massage both the body and the soul (Williams, 2005a). Dr. Skille observed the positive effects of VAT on 24 patients' symptoms, including Rett syndrome, Autism, Spastic conditions, etc (SKILLE, 1989). Found as early as 3500 BCE in Sumer (Galpin, 1929), harp instruments have strings that vibrate and penetrate the body, the pitches at varying frequencies could be felt by different parts of the body (Williams, 2005b). In 1990, vibroacoustic harp therapy (VAHT) was

begun with the combined use of an acoustic harp and a Genesis™ vibrotactile unit located in a chronic pain center (Williams, 2005 b). Dr. Sarajane did a tremendous amount of fundamental work in VAHT.

There are a few reports about the clinical study of harp therapy. In this paper, we reviewed the application of harp therapy, the harp music for treatment, and the training programs of the harp therapist. Additionally, the gender demographics of the published studies were analyzed.

#### Review of harp therapy *Application of harp therapy*

Harp therapy has been helping patients before and post-surgery, emergent medical

care, traumatic illness center, intensive care unit (ICU), reproductive medicine center, neonatal intensive care unit, department of pediatrics, and the terminally ill or dying ones.

Daleen Aragon and the coauthors applied harp therapy to Orlando Regional Medical Center patients in 2001. They proved that slow, soft, melodies of live harp music produced statistically significant differences in physiological measures of systolic blood pressure and oxygen saturation with a positive effect on patient perception of anxiety, pain, and satisfaction (Aragon, 2002). Studies from K. Sand-Jecklin and H. Emerson in 2010 showed that patients reported significant reductions in pain, anxiety, muscle tension, respiration rate, and systolic blood pressure (Sand-Jecklin, 2010).

Other studies demonstrated that harp music could help reduce preoperative pressure and anxiety (Gelatti, 2020), and there was a significantly larger decrease in state anxiety from pre- to post-embryo transfer and increased pregnancy rate (Murphy, 2014). Dr. Kathi J. Kemper and coauthors' study with 45 minutes of harp music showed reduced activity and increased weight gain in stable premature infants (Kemper, 2008).

In addition, harp therapy plays an important role in hospice (Ganzini, 2015). Dr. Linda Ganzini and coauthors surveyed 55 family members, whose terminally ill loved one experienced a music vigil during hospitalization. Family members perceived that the vigils resulted in modest improvement in the patients' breathing, relaxation, comfort, and ability to sleep, with fewer positive effects on pain, and almost no negative effects. In a clinical trial in 2006 (Freeman, 2006), 65 dying patients were administered a 25- to 95-minute intervention of prescriptive harp music. Data collected included vital signs and observational indicators before and after the vigil. Patients were more likely to experience decreased levels of agitation and wakefulness while also breathing more slowly and deeply with less effort at the conclusion of the music vigil.

### ***Music Played for Harp Therapy***

The reported harp therapy studies were with live harp music or recorded harp music with lengths from 10 minutes to 45 minutes. Dr. Sarajane Williams indicated the music compositions in the book 'Good Vibrations',

which included but were not limited to *Wind, Rain, and The Flight* (Williams); *Vibrations on a Theme by Mozart* (Anon./ Le Dentu); etc (Williams, 2005 c). The harp playing techniques of glissandos, damping the strings, and harmonics have special sensational effects. For live harp music therapy, a full-sized concert pedal harp could produce low, resonant tones (Williams, 2005 d). In a hospital setting, the small harp is an ideal instrument as well for bedside support.

Dr. Schneider and coauthor's study published in 2015 (Schneider, 2015) described a typical live harp music therapy procedure. The procedure is composed of live interaction between the harpist and the patient. The harpist introduced herself to the patient and asked a few questions about the symptoms based on the quality-of-life (QOL) variables to be studied such as "Are you in pain right now?" or "What would you like help with right now?" and "Is there any kind of music you do, or do not, want to hear?" Finally, "Would you like to receive the harp music now?" Because a standardized, recognized protocol for therapeutic harp technique does not exist, a therapeutic harp vibration protocol tailored to each study patient was created and administered. The music chosen in Dr. Schneider's study included 1) set of pieces chosen by the patient or by the therapeutic harpist including Celtic, classical, folk, country, inspirational, religious, or other styles; and 2) improvisations composed at the moment to address the patient's individual condition. The harpist examined the patient's verbal and nonverbal cues indicating their responses throughout the 30–40-minute intervention. These cues included respiration quality, patterns, and rates; movement of extremities; facial expression; emotional reaction such as tears or anger; body tension and position; and verbal comments. Based on these cues, the harpist adjusted different aspects of the music being administered, including tempo, key, rhythm, volume, chordal structure, and plucking techniques. The harpist employed classical Salzedo techniques and used a gut-strung Lyon & Healy Troubadour harp of 33 strings.

Gelatti F and coauthors' pilot study applied live harp music or recorded harp music to interventional or control groups (Gelatti, 2020). The intervention was carried out ac-

ording to the protocol and respecting some specific guidelines such as a gradual creation of the therapeutic sound space (regular beat, soft musical inputs-mainly 1st/5th intervals and almost no melody at first), a careful observation of the patient's reactions to the musical stimuli, the use of tunes in modal scales and subsequent modal improvisations on the basis of the perceived or declared mood of the patient, constant attention towards the respiratory patterns, and verbal feedback of the patient. The recorded music sessions used a stereo speaker and the same music that the harp-therapy student and professional harper had previously recorded. In both cases, the music was played at a volume of a minimum of 60 dB and a maximum of 85 dB. The live harp music was more effective in reducing HR ( $P = 0.001$ ) and diastolic BP ( $P = 0.007$ ), than was recorded harp music.

#### **Available Training programs for harp therapy**

*Bedside Harp's Harp Therapy Certification Programs (Bedside Harp. (n.d.))*

Bedside Harp program offers Certified Harp Therapist (CHT) and Certified Master of Harp Therapy (CMHT) programs accredited by the National Standards Board of Therapeutic Musicians (NSBTM). They are designed to train adult harpists and harpers to work as healthcare professionals in a variety of medical and wellness settings including acute care and behavioral health hospitals, hospices, long-term care facilities, assisted living, memory care, cancer centers, dialysis centers as well as doctors' and dentists' offices.

*International Harp Therapy Program (International Harp Therapy Program. (n.d.))*

The International Harp Therapy Program (IHTP) was founded by Christina Tourin, a pioneer and leader in the world of harp and healing, in the early 1990s. The program is accredited by NSBTM. The IHTP offers a comprehensive training program through a combination of two separate attendance modules, independent (at-home) study, and an internship.

*Harp for Healing, LLC (Harp for Healing. (n.d.)) offers three levels of training:*

1) Public Music for Medical Environments (PMME)—training in appropriate music for public areas of healthcare environ-

ments, such as lobbies, nurse's stations, hallways, and the like.

2) Clinical Musician Certification Program (CMCP)—training in the theory and practice of bedside therapeutic music. Accredited by NSBTM. Suitable for any therapeutic instrument – harp, keyboard, guitar, voice, dulcimer, etc.

3) Vibroacoustic Therapeutic Music (VATM) and Vibroacoustic Harp Therapy (VAHT)—Training in utilizing a harp or other instruments in combination with vibrotactile equipment to deliver the sounds and vibrations of music in what has been described as a “cellular massage”.

*Vibroacoustic harp therapy training course (VAHT) (Vibroacoustic harp therapy. (n.d.))*

Dr. Sarajane Williams introduced the vibroacoustic harp therapy training course to train harpists to provide VAHT and administrators/medical supervisors for VAHT practitioners.

*Music-Thanatologists certification from Music-Thanatology Association International (Music Therapy Association of India. (n.d.))*

Music-thanatology is a professional field within the broader sub-specialty of palliative care. It is a musical/clinical modality that unites music and medicine in end-of-life care. The music-thanatology utilizes harp and voice at the bedside to lovingly serve the physical, emotional, and spiritual needs of the dying and their loved ones with prescriptive music.

Members certified as music-thanatologists give evidence of the personal, musical, medical, clinical, thanatological, and professional competencies required to effectively offer the prescriptive qualities of music to meet the physical, emotional, and spiritual needs of people who are dying and their families, with harp and voice.

#### **Gender demographics analysis with the published harp therapy studies**

There are a few findings published focusing on the treatment study with harp music, among which there are 7 articles with gender information of the adult patients that signed the content for studies and 1 study with gender not reported. There is one study with 181

patients that underwent in vitro fertilization-embryo transfer procedure and that had to include only female subjects. In the remain-

ing six studies, female subjects accounted for 55% and male subjects accounted for 45% (Table 1).

**Table 1.** Gender information from published harp music therapy studies

Studies on harp therapy with adult patients	Authors and published year	Variables studied	Patients' gender		
			Female	Male	Not presented
1	Diane M. Schneider, et al. 2015	Quality of life variables: fatigue, anxiety, sadness, relaxation, and pain	65(72)	27(29)	
2	Fabrizia Gelatti, et al. 2020	Preoperative stress and fear related to minor surgery	25(54)	21(46)	
3	Daleen Aragon, et al. 2002	Postoperative. anxiety, pain, and satisfaction	7(41)	10(59)	
4	Freeman L, et al. 2006	Music thanatology--palliative care for dying patients	42(65)	23(35)	
5	Erin M. Murphy, et al. 2013	Anxiety from pre- to post-embryo transfer, clinical pregnancy rate	181 (100)	NA	
6	Lincoln, Valerie, et al. 2014	Inpatient acute care pain and anxiety			Not presented
7	AnnMarie Chiasson, et al. 2013	Pain, heart rate, respiratory rate, oxygen saturation, blood pressure	35(35)	65(65)	
8	Kari Sand-Jecklin, et al. 2010	Pain, anxiety, and muscle tension	17(55)	14(45)	
Overall cases except #5 and #6			191 (54)	160 (46)	

### Discussion

#### Sex Bias in Clinical Research and Gender Differences in Music Therapy

Sex bias has existed in clinical research historically, medical studies have excluded female participants and research data have been collected from males and subsequently generalized to females (Dresser, 1992). A study was performed with an observational analysis of data from registered clinical trials published in three high-impact biomedical journals, Journal of the American Medical Association (JAMA), The Lancet, and The New England Journal of Medicine, from January 1, 2015 to December 31, 2019. One

thousand four hundred and forty-two manuscripts with 4,765,783 human subjects were included for analysis. Significantly more males (56%) than females (44%) were included in all three journals ( $P < 0.0001$ ). Sex matching  $\geq 80\%$  was found in 24.6% of publications. Industry funded 43.7% of all studies enrolling significantly more males than females (60.8% versus 39.2%,  $P < 0.0001$ ). NIH funded 10.2% of studies enrolling significantly more females than males (52.7% versus 47.3%,  $P < 0.0001$ ). North America and Europe contributed 82.6% of the studies with each enrolling significantly more males than females ( $P < 0.0001$ ). The United



States was the country contributing the most studies (36.1%), enrolling significantly more males than females (55.5% versus 45.5%,  $P < 0.0001$ ). Cardiovascular disease was the subject area of the most manuscripts among medical specialties (19%), enrolling significantly more males than females (64.9% versus 35.1%,  $P < 0.0001$ ). According to the American Heart Association (AHA) Heart Disease and Stroke Statistics published in 2016 (WG members, 2016), among the 5.1 million cases of heart failure, 52.9% were men and 47.1% were women.

Nonetheless, music therapy showed a different trend in gender demographics with more female participants. A retrospective electronic health record (EHR) review (Rodgers-Melnick, 2024) was conducted across ten medical centers with hospitalized patients between January 2017 and July 2020. The music therapy team provided 14,261 sessions to 7378 patients across 9091 hospitalizations. In this study, patients were predominantly female (63.7%).

A systematic review and meta-analysis with a total of 154 results and 14 studies evaluated the effect of music therapy on anxiety and stress prior to dental treatments. More than 50% of female participants were enrolled in 8 out of the 14 studies (Lopez-Valverde, 2024).

### ***Reasons for the Different Demographic Trends in Music Studies***

There are possible explanations for the different sex demographics in music therapy studies.

Females have positive attitudes about music therapy. A survey with 184 participants on the attitudes toward and willingness to use music therapy was obtained between 2014 and 2015 (McDaniel, 2015), the study showed a significant difference in the scores of knowledge of music therapy for females ( $M=4.27$ ,  $SD=0.53$ ) and males ( $M=4.09$ ,  $SD=0.35$ );  $t(65)=1.99$ ,  $p=0.01$ . Females and adults ages 45–54 reported the most positive attitudes about music therapy. A randomized study of cardiovascular prevention trials with 783 participants across 13 clinical centers showed that women had lower distrust of medical researchers (Ding, 2007).

There are gender differences in psychophysiological responses to music listening

and music therapy. A study in 2016 presented a comparative account of psychophysiological responses to music listening in healthy males and females. The stimulus material was a slow-paced taped rāga Desi-Todi on a flute. The participants listened to music for 30 minutes a day for 20 days. The pre-and post-treatment procedure was adopted for assessments of psychophysiological measures. This study showed that the effects of music listening, that is, reduction in negative affect, enhancement of positive affect, and decrease in blood pressure and heart rate, were more intense in females than males (Uma Gupta, 2016). Gender differences in the outcome of guided imagery and music (GIM) therapy were explored in a study with a potentially gender-sensitive instrument, the Inventory of Interpersonal Problems (IIP), as well as the Symptom Checklist –90 (SCL-90) and Sense of Coherence (SOC) scale (Dag Körlin, 2001). The study revealed that women benefited more than men in relational aspects measured by the IIP. In the SOC, there were gender differences in subscale effects consistent with current assumptions of gender roles. There was also support for the observation that men have a higher threshold for seeking psychotherapeutic treatment.

In addition to the psychophysiological responses, there is a gender difference in pain tolerance and pain rating from music treatment. Sina Ghaffaripour and coauthors assessed the effect of two types of music (Iranian folkloric and preferred music) on pain tolerance and pain rating in a cold pressor test with 50 healthy Iranian medical students enrolled (Ghaffaripour, 2013). Mean tolerance time was significantly higher in preferred music compared to Iranian folkloric music ( $F(1,48) = 25.44$ ,  $p=0.0001$ ) and no music ( $F(1,48) = 3.51$ ,  $p=0.0001$ ) conditions. There was a significant interaction when tolerance time in no music condition was compared to preferred music condition, regarding sex; Tolerance time increased more in females ( $F(1,48) = 5.53$ ,  $p=0.023$ ). Music distracts the attention from pain and Women can be impressed and distracted more easily by music.

### **Conclusion**

Harp has been more and more widely applied in therapy, such as pain, anxiety and

pressure and muscle tension relief; from the field of reproductive medicine, neonatal care, quality of life in the hospital, to Hospice. Certified training programs that are essential for effective and professional treatment are

available from different organizations. There is no gender difference study reported in the harp therapy field, psychophysiological responses from different genders need to be investigated in future studies.

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