

## Full-Length Article

## Music Speaks the Words: An Integrated Program for Rehabilitation of Post Laryngectomy Patients in Khon Kaen, Thailand

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### Abstract

Music is known to be beneficial for cancer patients. Patients undergoing laryngectomy experience profound changes in speech, swallowing, breathing, mobility and some sequelae of the disease or post irradiation effects; thus a comprehensive rehabilitation program is necessary. Music, art, and dance were integrated into our institution's monthly speech rehabilitation program and the annual "Art 4'Mee Camp", a multidisciplinary care program. The various techniques used were eurhythm, rhythmic voice projection, body expression and mirroring, and creative music making. Religious traditional art was also applied as a therapeutic mean. We found 75 percent success rate in esophageal speech training with the participants well accommodated in all activities. Under limited resources, the integrated music, dance, and art combined to the rehabilitation program worked well in allowing a holistic care for the patients.

**Keywords:** *Music, Art, Dance, Laryngectomy, Cancer, Thailand*

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### Introduction

Music is a part of the long-standing cultural identity of Thailand. In an aspect of ritual, it has been used in traditional medicine as a healing remedy [1]. Although music used in modern medicine is a new entity in Thailand, increasing numbers of health care centers have allowed music to be used in their services. With scarce number of music therapists, music has been exercised to soothe and entertain the patients mostly by volunteering musicians or health care personnel.

Khon Kaen is a center of education and health care in the northeast of Thailand, where Srinagarind Hospital, a university hospital, is situated. Cancer is a major health problem in this region; therefore, the hospital serves as a super tertiary center for cancer treatment in the northeast region covering almost one-third of the population of Thailand. Majority of cancer patients were diagnosed in advanced stage,

almost 60 percent presented with pain [2]. In addition to the modalities for curative treatment, including surgery, radiation, and chemotherapy; we have worked in cooperation as a multidisciplinary team approach to improve the quality of life of the patients. Previous music therapy initiated in our medical settings was mostly passive listening. A randomized controlled trial was conducted using local traditional instrumental music in cancer patients receiving chemotherapy in our hospital, it showed a significant reduction in pain score and anxiety in treatment arm [3].

Head and neck cancer is one of the major cancer burdens in Thailand, with an incidence of 14.2 per 100,000 in males and 9.7 per 100,000 in females [4]. About 170,000 outpatient visits and 26,000 admissions nationwide costed around 21.8 million USD in the year 2010 (excluding intangible cost) [5]. Besides their mortality, cancer involving the head and neck region and its treatment potentially causes crucial functional deficits. Especially cancer of the larynx or hypopharynx extensively affects the patient's quality of life. More than 80 percent of laryngeal/hypopharyngeal cancer patients presented in advanced stage beyond possible laryngeal preservation, most cases end up having their larynx removed, the procedure called laryngectomy. By (total) laryngectomy procedure; the larynx, with surrounding neck tissues, is removed; the trachea is mobilized to open on the lower neck for breathing; the remaining pharyngeal tissue is closed to create a neopharynx. Resulting in many functional deficits include speaking, swallowing, breathing, and physical disabilities around the head and neck region, not to mention disfiguring, emotional and behavioral disturbance [6].

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This article describes a model of integrating music, dance, and art into a comprehensive rehabilitation program for laryngeal cancer patients undergoing laryngectomy.

**Methodology**

**Concepts**

After removal of the larynx, the patients (called laryngectomee) have to breathe through the tracheostoma, swallow through the neopharynx, and are certainly unable to speak. As the incidence of this cancer is about 10 times more common in males than females [3], with undermined self esteem along with multiple disabilities; most cases developed depression, anger or sometimes aggressive behavior after the laryngectomy. The idea is to work on their abilities to overcome their disabilities. Music, dance, and art were used as tools to exercise on their perception and expression, which were distorted, by the disease and its treatment. Therefore, we incorporated music and art into an established speech rehabilitation program to develop an integrative rehabilitation program for laryngectomees.

**Participants**

We recruited the patients diagnosed as laryngeal or hypopharyngeal cancer, who had undergone total laryngectomy, with or without postoperative radiotherapy, and their caregivers to participate in the program. The health care personnel involved in this program included otolaryngologists, speech and language pathologists, physical therapists, nurses, social workers, and music, dance, and art instructors. All patients and health care personnel participated in all activities without categorizing as patient or medical personnel.

**Interventions**

The music, dance, and art were used in the two main activities for rehabilitation of the laryngectomees (*Table 1*).

(1) The music program was integrated into the previous esophageal speech-training program, a monthly hospital-based activity conducted by the speech and language pathologists and laryngectomee volunteers. The music supplement was aimed to support the esophageal speech training, included creative music making, music and movement, music and breathing. We also used music to accompany the esophageal voice projection, which concluded by singing and dancing the traditional song by esophageal voice (depending on their ability).

(2) The Art 4'Mee camp, stands for the arts for the laryngectomees, was held annually. It is a two-day program designed specifically for the laryngectomees and their care givers with aims to support and empower them in order to regain their normal livelihood. The use of music, dance, and art in this camp is encouraging for internal connection between their body and mind, and external connection among the participants. Besides music, dance, and art; the program

included meditation, yoga based exercise, and workshop for self-care.

**Table 1:** *The programs on integrated rehabilitation for laryngectomee*

Programs
<i>Monthly esophageal speech training program</i>
Esophageal speech training
Physical therapy
Music (Eurhythmy, Rhythmic voice projection, and Creative music making)
<i>Art 4'Mee camp</i>
Music (Eurhythmy, Body expression and mirroring, Dance improvisation, and Creative music making)
Art (Art work, exhibition, and reflection)
Yoga and physical exercise
Meditation and Buddhist sermon
Training for self-care (Cancer surveillance, Self health care, Self physical therapy, Healthy food - good taste)

The music program was based on a participatory group approach conducted by the author who is a music educator (NV) and physician (PV) with the ratio of therapist-to-participants about one-to-fifteen. All music uses in this program is a live music with the duration of 20-30 minutes for each session.

Eurhythmy [7], was conducted for the participants to use their body movement according to the melody, harmony, and rhythm; in connecting to all others. The idea is for the participants to bring out their inner qualities of language and music what they could not express verbally. Rhythmic voice projection was directed by using music to trigger their esophageal voice syllables. Body expression and mirroring was applied from a drama therapy. One expressed his trouble or difficulty as a statue, the other imitated as a reflection, and one modified the statue to resolve the difficulty. This was not only to allow expression of oneself, but also to encourage empathy of others. Dance improvisation allowed the participants to spontaneously create their movements according to the music and stories. Creative music making is a group music performance with their own choice of instruments and by spontaneity (improvisation) without any melodic guidance. This could be participated without needs of any background on music performance [8].

The art educator conducted the art program on a basis of expression and reflection. Different art works were chosen in each year. For instance, the participants were instructed to draw and paint on cloth the Buddha image in various poses according to the day of the week they were born on, called Prabot (similar to Pattachitra from India) [9] e.g. participants born on Thursday draw a meditation pose (*Figure 1*). All art works were exhibited at the end of the day and the

participants were allowed to reflect on the works in response to the question “*how do you like it?*”.

This program is not a research-based project. However, it was evaluated by several measures as an assessment on their routine service. The esophageal speech competency was monitored along with the monthly training program. In the camp, all participants were interviewed and requested to anonymously express their thoughts and feelings by writing on a leaf shape sticky note to put on the Tree of Hope.



**Figure 1:** Prabot, the art works of Buddha image in various poses according to the day of the week by the laryngectomees

## Results

In our pilot program between October 2010 - August 2011, 16 laryngectomized patients with 14 caregivers participated in the program. All participants accommodated well with all activities with satisfaction. Although all cases were complete absence of speech initially, twelve of 16 cases demonstrated an improvement on their esophageal speech outcome after average 5 out of 11 times of participation during a one year period. Half of improved cases could produce  $\geq 3$  syllable/word sentences, and the other half could produce 1 or 2 syllable/word sentences. None of participants had a previous experience on a formal music lessons. Although they were unfamiliar with music performance, they were eager to engage into all music, dance, and art activities.

The messages delivered through the Tree of Hope, although subjective, reflected the apparent change in the participants. According to the context of the messages, we found subjective positive attitude towards living. e.g. “*I once felt desperate with suicidal ideas, now I’m encouraged to live.*”, “*This camp made me feel like being reborn. I am feeling happy to be part of the people here*” etc. Moreover, for the medical personnel, most responses reflected an empathetic sense. An unexpected outcome was the otolaryngology trainees to deeply express their empathy toward the laryngectomized patients, and initiated further activities to support the rehabilitation programs for the laryngectomees.

## Discussion

The use of music, dance, and art for laryngectomized patients is sparse in the scientific literature. No music therapy program was found in the literature search through the indexed journal databases. We used existing limited resources to work on limited abilities of the individuals. After (total) laryngectomy, most crucial physiology in the head and neck region are distorted, such as breathing, swallowing, smelling, body moving; and certain functions are completely lost i.e. laryngeal voice and some sacrificed nerves. This enhances the underlying anxiety and depression on suffering of cancer. By a positive approach, we worked on their abilities instead of their disabilities.

The principle of using music, dance, and art in this program is based on the 5 mechanisms from A to E.

(A) Aesthetic experience; exposure to the beauty of music, dance, and art is related to activating the sensorimotor area, core emotional center and reward circuit in the brain [10]. The benefit of aesthetic experience is not only for pleasure, but the evidence showed that music stimulation on the nucleus accumbens can reduce depression.

(B) Bridging the gap; as most cases were isolated in the community due to communication gap, the designed music program allowed each individual to connect to each other and act as a part of the group without verbal communication required.

(C) Creativity exercise; almost all cases were a family leader, suffering from cancer with disabilities undermined their self-esteem [11]. The ability to create music with the sense of achievement is valuable for the participants. Potentially, it will enhance their self worth and fulfillment.

(D) Driving the internal activities; according to the principle of anthroposophy, the elements of music was selectively used to stimulate thinking (melody), feeling (harmony) and willing (rhythm) [12]. This was supportive and stimulative for the speech and physical rehabilitation activities.

(E) Expressive communication; under limited speech, music, dance, and art allowed a safe zone for participants to express their feelings and thoughts through their works [13]. The above mechanisms ensured the use of music, dance, and art to integrate in medical setting with holistic benefits.

For the speech rehabilitation of the laryngectomized patients, there are 3 methods available, i.e. esophageal speech, tracheoesophageal puncture (TEP) with prosthesis, and electrolarynx. Although TEP is widely accepted as the most effective one [14], it is less feasible in developing countries that the high cost prosthesis need to be exchanged in every 6 months with potential complications including granulation tissue formation (4.2%), deglutition of prosthesis (12.7%), TEP enlargement/leakage around prosthesis (19.1%), mediastinitis (3.1%), and paraesophageal abscess (3.1%) [15]. While the electrolarynx is ready to use; it is less practical and more expensive. Its monotone and monoloudness restricts its

capacity for tonal language as Thai. It is applied for those who fails the other two methods. We, therefore, have implemented esophageal speech as the mainstay for rehabilitation in our center. However, with lower success rate comparing to other techniques, a well-organized continuing program is crucial. By this approach, with 75 percent success rate for speech rehabilitation, we could save about 14,000 USD for the electrolarynx of only 12 cases. Moreover, we found the laryngectomees were better accommodated to the program than the beginning years.

Although the program was successfully conducted in our center, there were several limitations to be addressed. Firstly, we focused more on action to implement the program rather than conducting the research. Thus, more objective outcomes are needed to evaluate the effectiveness of the program. Secondly, as most cases were from low socioeconomic status and resided in remote areas, it is challenging to maintain their continuing participation in the program throughout the year. However, we have initiated the fund for laryngectomee in the northeast to support the travel cost and relevant expense in visiting the rehabilitation program beyond the payment from the government by universal coverage scheme.

In conclusion, we presented the model of integrating music, dance, and art into a comprehensive rehabilitation program for laryngectomized patients. With specific goals in designing the program, we found the participants accommodated well with all activities, and potential benefits in enhancing the outcomes of the rehabilitation program. Further evaluation, nevertheless, is required to objectively determine the effectiveness of the program.

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