

## Medicine and Music – Is There a Connection?



What, if any, connection exists between medicine and music? Of course, there are differences, with medicine being part science and part humanities, while music is almost entirely an art form. What possible relationship could exist between these 2 entities?

Many decades ago, and to my surprise, I discovered upon entering medical school that there was a surprising number of extremely talented musicians in the class studying alongside me. One member of the class could play just about any wind instrument and had just returned from Vienna, where he had studied music composition during a year-long Fulbright Fellowship. Down the road, this individual combined the 2 fields by working half time in an emergency ward while directing a major city philharmonic orchestra. Another classmate was a talented violinist who had just completed a performance master's degree at the Julliard School in New York City. Not surprisingly, he eventually became a highly skillful and successful plastic surgeon. In addition, several more of my classmates were proficient musicians (piano, clarinet, and trumpet) who had performed with various orchestras and choruses. I was embarrassed to admit to them that I had once been a rather mediocre violin student during grade and junior high school, although I loved all forms of music, especially 17th, 18th, and 19th century compositions.

Over the years, while co-teaching a medicine and literature course,<sup>1,2</sup> I discovered that a substantial number of composers and current-day musicians were also physicians. Thus, I gradually came to understand that there really was a link between medicine and music. One of the most famous examples of this is a beautiful piece written for the viola by the French composer, Marin Marais (1656-1728), entitled *Description of the Cystostomy*. This operation to remove a bladder stone was performed without anesthesia and with 3 servants holding the patient down while the barber surgeon sliced open the perineum and removed the obstructing stone from the bladder. At that time, this interventional procedure

carried a mortality of 60%! One can hear strains in this piece where the music is rapid and excited, acoustically describing the agony of the operation.<sup>3</sup>

The Russian composer Alexander Borodin was a doctor and a chemist who made important early contributions to organic chemistry. Today, he is known only as a composer, but he regarded medicine and science as his primary occupations. He practiced music and composition only in his spare time or when he was ill. Additionally, Borodin was a promoter of education in Russia. He founded a medical school for women in Saint Petersburg, teaching there himself until 1885.

Many other physicians from an earlier time were talented musicians, including William Withering (1741-1799) of digitalis fame, who also was a skilled performer on the harp and the harpsichord. Edward Jenner (1749–1823), crucial to the control of smallpox through variola vaccination, was an excellent violinist and flutist. Theodor Billroth (1829-1894), the innovative Austrian surgeon, was an accomplished pianist. He often had friends come to his house to play music. Among those who performed with him was Johannes Brahms (1833-1897). And finally, among this list of talented composer-musician-doctors was the polymath, Albert Schweitzer (1875-1965), who gave organ concerts and was also a famed musicologist.

Another bond between medicine and music is the newly constituted field of music therapy, which is defined as the clinical and evidence-based use of musical interventions to accomplish therapeutic goals, usually involving a professional therapist who has completed a music therapy program.<sup>4</sup> Medical music practices include working with individuals with special needs utilizing songwriting and listening to music. Music therapy is also used to help elderly patients improve orientation, mental processing, and relaxation. This special area of therapy also uses rhythmic entrainment for physical rehabilitation in stroke survivors. A variety of health care institutions employ music therapy; for example, hospitals, cancer centers, schools, alcohol and drug recovery programs, psychiatric inpatient and outpatient clinics, nursing homes, and even prisons. There is a wide qualitative and quantitative research literature base involving music therapy. It has even been suggested that singing and instrumental activities could have been a factor in the evolution of our species, helping to refine motor skills

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and paving the way for the development of fine muscle control required for speech.<sup>5</sup>

Evidence from a variety of investigations suggests that music therapy is beneficial both physically and mentally.<sup>5</sup> Medical benefits of music therapy include slower heart rate, reduced anxiety, brain stimulation, and possibly, improved learning.<sup>4,5</sup> Music therapists seek to help patients in many areas, ranging from stress relief prior to and after surgery to amelioration of symptoms in patients with central nervous system pathologies such as Alzheimer disease. One study demonstrated that children who listened to music during an IV insertion showed less distress and felt less pain than the children who did not listen to music while having this procedure.<sup>4</sup> Moreover, individuals with mental health disorders such as anxiety, depression, and schizophrenia have shown visible improvement in mental health indices after music therapy.<sup>5-7</sup>

On a personal note, my talented composer/wind instrument-performing friend from medical school helped me to play basic baroque music on a wooden alto recorder for both entertainment and relaxation during the challenging first year of medical school. More recently and until the onset of the pandemic, I often practiced and played with a dear friend and with a local group of mostly retired music teachers to “de-stress” after a long and arduous day of clinical medicine, teaching, and mentoring. I am certainly the

weakest musician in each of these venues, but, as in so many other disciplines, working with individuals more capable than yourself makes one strive to do better.

As always, I welcome responses to this commentary at jalpert@email.arizona.edu. I promise to respond.

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