

On Psychoacoustic Studies of Didgeridoo

Introduction:

The recent Ig Nobel Prize (2017) has been awarded to a pioneering study conducted by Puhan and Colleagues in 2006; because of its potential implications for health.^{1,2} The Ig Nobel Prizes are in general introduced with a motivation to encourage research studies that initially make you laugh, but later leave you thinking.¹ In the above-mentioned study,² which was published in the British Medical Journal (BMJ), they showed for the first time, how the regular practice and playing of didgeridoo can help in reducing the problems caused by Obstructive Sleep Apnea (OSA). Since OSA is a potentially serious disorder, studies concerned with alternative ways of preventing and healing can be of great value. Thus, it is no surprise that this study has won the Ig Nobel Prize award. This is the first study to exploit didgeridoo – the oldest wind instrument that belongs to Australian Aboriginal tribes,³ - for its health and healing benefits. Though this study has triggered many similar studies that use this instrument for varying purposes,⁴ we still haven't explored its entire potential for different health conditions. In light of the latest achievement,¹ here, we discuss the other possible uses of the didgeridoo, and also the kind of studies that are needed to explore its benefits. Such ideas are helpful in expanding the work of Puhan et al. (2006), and the outcomes may supplement and support various medical interventions.

The Psychoacoustic Studies of Didgeridoo:

In Puhan et al. (2006), and other studies that followed, the main focus has been on how the practice of playing didgeridoo can help in preventing a few health issues.^{2,4} They usually connect most of these benefits to a unique blowing technique (called circular breathing technique) by which one plays this instrument. According to the latest survey, since adherence to commonly available treatments like Continuous Positive Airway Pressure (CPAP) is low, number of patients are interested in didgeridoo as an alternative therapy for OSA.⁵ Though we have numerous studies

reporting the benefits of playing the didgeridoo, it is surprising that we lack large-scale statistical studies of the effects of didgeridoo in subjects with different backgrounds and health conditions.^{4,5} Thus, there is a need for attention of the mainstream community to take these issues into consideration. Even in that case, this kind of studies can only reveal how an individual (either a player or practitioner) benefits from blowing the instrument. In addition to this, if we are interested in investigating the extent to which a playing instrument would influence/affect the (passive) listener or audience, a different section of research studies (analyzing the psychoacoustics) are needed. The latter studies may aid in knowing how listening to such an instrument may benefit in cultivating the health and well being. Thus, any investigation exploring the potential use of an instrument would be complete only with the combination of the former and latter set of studies.

Apart from this, the other ways and purposes of studying the instrument may also result from one's knowledge of the respective tradition; as, to why and in what context, do the aboriginals use didgeridoo? Do they use it simply as a musical instrument? Or is there any other known practice? In this context, if we explore the traditional usage of the didgeridoo, we find to our surprise that aboriginals use it primarily for healing and wellbeing, and also during spiritual retreats, ritualistic practices and special ceremonies.³ This is because they believe that frequencies/sounds emanated from didgeridoo have healing components. Empirically, such notions can be verified only through the psychoacoustic studies of the didgeridoo. Since we already have a few psychoacoustic studies (of different instruments) showing the influence of specific sounds/frequencies (and even music) on one's mind and emotions,⁶⁻⁸ it is important to conduct such studies on didgeridoo as well.

In this connection, preliminary evidence of the benefits/positive effects of didgeridoo sounds can be drawn from the acoustic studies conducted on didgeridoo.^{9,10} Here, they studied the blowing acoustics and also analyzed the sound spectrum radiated from playing didgeridoo in different scenarios. On thorough examination of radiated sound spectra of these

cases, one can notice the presence of sound components in the infrasonic range as well as in ultrasonic range; which in turn depends on various other factors. Since both infrasound frequencies and ultrasound frequencies (of low-to-mid range) are known to have beneficial effects on biological systems, one may relate this directly to the healing properties of didgeridoo sounds. For an in-depth understanding of how these frequencies may affect, one needs to examine the mechanisms by which they trigger various biophysical processes (to know the physiological influence), and neurophysiological processes in connection to psychoacoustics. In the context of therapeutic and healing applications, several studies have already identified and categorized some of the possible effects based on the nature of mechanisms they produce in the body. 6-8

Conclusion:

In this respect, the present letter is an attempt to suggest that the infrasonic and ultrasonic frequency components present in the sound emanated by the didgeridoo may be beneficial in other health conditions. Such findings may support alternative ways of healing such as sound healing and music therapy and thereby complement other clinical interventions. It also brings to the notice of mainstream research community that there is a need for large-scale studies on exploiting didgeridoo as an alternative therapy.

Competing interests: No competing interests

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