

Article

MEDICINE AND MUSIC

-the use of specially designed music in intensive care section 4131, Danish State Hospital

Impact of the sound environment on healing

Sick people get admitted to a hospital in order to get well. But the noise and bustle which patients in most wards are surrounded by each day, and the stress and anxiety this leads to, can often make them even more sick.

Many improvements are being made in hospitals today, but such an important factor as the everyday sound environment (and the *environment* in general) has been far too neglected up until now in the hospital setting – where there is a strong need to give patients an optimistic and positive motivation to get well again.

Among seriously ill patients, one can often sense that they are trying to draw themselves out of their bodies, and their friends and family often say that they seem to be losing the will to live, even though the patients themselves are unable to talk about it, as they are often unable to speak.

As a supplement to the medical treatment we can offer as doctors, it is thus important that we can also promote positive feelings in our patients – good experiences which give them a sense of being alive and keep them in their bodies, and which give body and soul the strength to recover. We have long accepted and recognised the vital connection between mind and body in modern medical science, especially with a focus on patients' feelings – and music is central here, because it maintains the physical element.

A positive and optimistic audio environment is therefore one of the vital factors which can be changed. By creating a positive image/dream-like experience for patients, using a specially designed music and sound environment, the surroundings in a hospital ward suddenly feel completely different and much less anxiety-inducing for patients.

Deeply anaesthetised patients

It's one thing to be senseless with rage. That's something we understand – and something we can get over. But to be *literally* senseless is actually a terrible experience, and can be difficult to recover from.

An absence of sensation is precisely what people in intensive care wards and under anaesthetic experience. Sleeping medication disrupts our memory and our ability to dream, and it is in that dreamless state, with no sensation, that we as medical practitioners leave our patients – like ships on the open sea. To be without sensation is like being dead, and patients often complain that it is as if something has been taken away from their lives, which they will never be able to get back.

In hospitals, unpleasant noises are frequently heard, such as alarms and the sound of the respirator – sounds which cause anxiety and unrest. These sounds have been designed by the manufacturers to be unpleasant for the hospital staff, who have to react quickly to the alarms. But if music is played in the wards, the unavoidably stressful background noise is reduced, and our trials with a specially-designed music and sound environment have quite clearly shown that even subdued music can positively dominate over background noise. This positive effect influences patients, visitors and staff, who all find it relaxing to hear the sounds of nature and music – a so-called 'designed sound environment'.

Special qualities of a designed sound environment

There has been increasing interest in recent years in using music in association with treatment of the sick, but often the music which is played for patients is quite arbitrary.

Various types of music possess various qualities, and these are what gives each type of music its strength in the right context. However, far from all music is suitable for use in a hospital environment – it is actually incredibly important that the music fulfils very particular quality requirements which take into

account the changed perception of sound that patients have. It must have a peaceful, subdued, basic rhythm, with a very conscious use of a combination of dark and light layers which connect with people drifting off to sleep, and people waking up – to both calm and troubled spirits. The music has to feed patients' fantasies to compensate for their dreamless state, and mobilise feelings and a sense of reality, while also stimulating memory. This aspect is particularly enhanced by the combination of specially designed music with sounds from nature, which are universally recognised and provide a 'lifeline' to nature's archetypal and basic sounds – such as the sound of rain, birdsong, the wash of the sea, and the gentle breeze in the trees.

In the project organisation, Musica Humana, we have helped the composer Niels Eje to create and trial specially-designed sound and music environments, which are a world first in that they have been very consciously created and produced with the special aim of being used in hospitals, and particularly with deeply-anaesthetised patients and patients who are waking up.

The sense of hearing and music

The sense of hearing is the only sense which is not muted in anaesthetised patients undergoing operations and deeply-anaesthetised patients in intensive care wards.

The ear is therefore the only channel through which these patients can be given a connection with life. Humans, like animals, have the quite special ability of being able to hear during sleep. We would have long been eaten by wild animals if we didn't have an ear which "stayed open" during sleep. Another important fact is that since the dawn of the ages we have had the common characteristic that the sound of our mother's heart was the first rhythm we experienced – a basic primordial sound. During pregnancy, a mother's heartbeat is relatively slow and peaceful. The link between the slow heart rhythm and the security of the womb is maintained throughout life. Even in adults, a slow rhythm of about 60 beats per minute will generate a feeling of security.

The other exciting thing about the ear is that it is situated close to the brainstem, containing all the important centres which control the brain's level of consciousness, whether one is awake, asleep or unconscious. We now know that the brain has a music centre. This region of the cerebral cortex is located close to the centre of emotions. There is "cross talk" between the emotions and music, something we are aware of when we listen to music which "touches" us. This means that using the ear as a door, we have the opportunity, via the brain, to influence the emotions and the level of consciousness using music. It has been shown that the eardrum can change in tension, thus altering the amplification and hence the perception of music. This muscle in the inner ear (musculus Stapedius) is anaesthetised along with the patient. This means that the perception of music is altered in patients who are sedated and anaesthetised. Even small variations in the volume of the music will seem like noise without the capacity to change the stiffness of the eardrum. Today, the use of sound influence is quite arbitrary, and does not adequately take into account the altered sense of hearing in anaesthetised patients.

The designed music and sound environment thus also has a very tangible and beneficial "physical" function. It helps to stabilise sound levels and establish a constant stream of life-giving harmony, which provides the security we lack in today's modern, high-technology hospital world.

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