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Journal of Alternative Medicine Research

The *Journal of Alternative Medicine Research* is a peer-reviewed journal published by Nova Science Publishers aimed at the scientific community interested in the broad area of integrative, complementary, and alternative medicine. This Journal provides an international, multidisciplinary forum with a holistic approach to health issues, health and medicine, social policy, service aspects, developmental aspects, epidemiology, rehabilitation, social issues, quality of life, and all other aspects of human development over the whole age spectrum. The *Journal of Alternative Medicine Research* covers all aspects of health and human development in the form of review articles, original articles, case reports, short communications, letters to the Editor, and book reviews. Manuscripts will be reviewed from disciplines all over the world. The international Editorial Board is dedicated to producing a high-quality scientific journal of interest to researchers and practitioners from many disciplines.

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Editorial

Holistic non-drug medicine or biomedicine?

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Money rules the world. But many things are more important for our quality of life than money – health, good relations, happiness, and health again (1). Medicine is about health, but not only health – about regaining ability and quality of life. If we are happy and well functioning in all aspects of life, and able to live here and now and enjoy life without pain and so forth, why would we complain about a disease? Most interesting, getting back to live and recovering sense of coherence is also what in the end will let us get well again (2,3).

Drugs are sometimes the most helpful treatment. If you have syphilis, we believe penicillin is the treatment of choice. But if you are just chronically ill, in pain, depressed, and in a bad existential condition, drugs most likely will not help you at all, but only burden your system further. Antidepressant drugs are hardly more efficient than active placebo (4).

We know that most drugs have a Number Needed to Treat (NNT) of 5-20, meaning that between 5 and 20% of patients are helped (5). We also know that Number Needed to Harm (NNH) is between 2 and 5 for most drugs, meaning that 20-50% of patients will have side/adverse effects. So we know that some patients are helped, but many also burdened by drugs. This makes us question if drugs in general are valuable as medicine. Let's quote from the British Medical Journal (BMJ) (5):

"Younger readers of the BMJ, of whom there are many, will be familiar with the Verve's song "The drugs don't work." It's unclear whether this song, which is sung in a distinctly druggy manner, is referring to legal or illegal drugs or even the drug of love. But a spoof piece on the web claims that: "The world's major pharmaceutical companies are to sue the Verve for loss of earnings and defamation following the release of their single." Now business has outdone parody, and Allen Rogers, worldwide vice president of genetics at Glaxo SmithKline, is reported on the front page of the Independent (8 December, p 1) as saying: "Our drugs don't work on most patients." (p 1366). This is of course no news to doctors. Anybody familiar with

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the notion of "number needed to treat" (NNT) knows that it's usually necessary to treat many patients in order for one to benefit. NNTs under 5 are unusual, whereas NNTs over 20 are common. Rogers's quote has, however, hit the media like a bombshell. Why is the NHS paying over £7bn (\$12bn; EUR10bn) a year for drugs that don't work?"

When it comes to holistic medicine – complementary, integrative, psychosocial – we know that if you avoid vigorous massage and perfumed massage oils, there are hardly any side effects of conversation- and touch therapy (6). We know that even the most vulnerable of patients, the mentally ill kids and teenagers – are helped by massage therapy (7).

What we do not know today is how efficient non-drug medicine really is. Because the money for research has been so scarce that practically no large studies have been accomplished. The industry not only finances the research, and sets the standard for how to document – that is, against placebo – but it also efficiently lobbies all national medical organs. It is one of the largest industries on the planet, so it has unlimited resources for this. And these resources are used for hiring the best brains available. Also the best political brains. Because many brainy people go for the money. This is understandable, because psychologically, being mental is connected to being materialistic and not into deep stuff like love, natural living, sustainability and spirituality.

Because of the intensive lobbying governments often tends to "forget" to control the positive and negative effect of the drugs. Most new drugs are in the end not the least better than the old ones (8), just 100 times more expensive – and therefore strongly pushed by the drug companies. Long term evaluation of adverse effects is never asked for. Suicides that are likely to be provoked by drugs are not accounted for as an adverse effect of drugs (9) or sudden spontaneous death not included in the drug statistics.

But the kindness towards the drugs goes even further. We know that at least one in three patients do not have compliance. These patients take the drugs the way they like, not the way they were intended. Some days no pills, some days five. This is extremely dangerous. We know that this is how patients behave. This **MUST** be included in the evaluation of the risks of the drugs.

The next thing is that drugs are poisonous - and often used as poisons i.e. for committing suicide. This

is also an important side effect of the drugs – that you are tempted to end you life, because this can be done so easily. Among the 16-18 year old girls in Denmark one in six have tried to commit suicide – most often by using drugs. This just was yesterday's news on Danish TV.

If the diagnosis is incorrect – which is the case in about one in three in all major studies, the wrong drugs are given! If the dose by mistake is not correct, the toxic effect can also easily kill a person and this happens with patients every year! These risks exists because doctors use drugs instead of the harmless classical system of holistic medicine that only works through the patient's consiousness and focuses on the development of the patients character – going all the way back to Hippocrates (10).

Then we also have the issue of many types of drugs often given to the same patient, and by mistake patients confound some drugs with another. The nurses and doctors in the hospitals often confound the drugs also. Pills are physical objects. They are lost and found by kids that eat them. They are stolen and sold. They are abused. All these are also problems coming directly from using drugs. All this could be turned into a science of how dangerous and malicious drugs are, when used as medicine. But this is not likely to happen. Because nobody – except the patients – has any interest in developing such a science. Nobody wants today to pay for the documentation of positive effects of non-drug medicine, and nobody wants to document the negative effects of the drugs. We call this industrial-political bias of the medical research. Because of that, patients get the drugs that harm and do not help. This is in direct conflict with all medical ethics. So what is happening, where is the consiousness of the contemporary physician? Medicine is not about money it is about helping people. How could we forget that?

Imagine for one moment that it was the interests of the patients that were the focus of medicine. The first thing this would to do was to take the perspective away from OBJECTIVE changes, to SUBJECTIVE changes. Does the patient feel or function better? This will be the central question. Global quality of life and sexual, social, working etc. ability of functioning are rarely –almost never - included in the documentation of drugs. But these dimensions are almost always

included in the documentation of holistic and integrative medicine.

When we look at these subjective dimensions, we have in our own research seen that half the patients treated with holistic medicine for physical, mental, sexual, existential, or psychiatric problems are getting better (11-17) with NNT=2 and NNH>1000. Even one quarter of the patients who had lost their ability to study or work are often getting this ability back (18). Existential healing is a miracle, not in a religious, but in a practical sense: The patients are getting their life back. And this is what medicine has been about since it's beginning.

It is becoming increasingly clear what is happening to medicine today: The commercial interests of the world have stolen medicine from the patients. We need to change that now. We need to take the power back from the industry and give it to the patients.

Most sadly, researchers in complementary, psychosocial, and integrative medicine – call it holistic medicine, call it CAM – are often being scolded by their biomedical colleagues. Rumours and false accusations for quackery, fraud, sexual abuse of patients, maltreatment and induction of temporary psychoses and other kinds of harm from psychotherapy and bodywork are so common that many people have started to believe that holistic medicine is dangerous – some people believe it to be even more dangerous than drugs! This is ridiculous, but this is the power of money that talks, and that mislead us all – the public and, most sadly and most importantly, also the politicians.

What can we do about it? Well, start by siding up with your patient. If you want to help, ask yourself what the real problem is. Something is not right in this life; talents are not being used, value is not being created, time is lost. This is what is wrong. Relations are bad. Philosophy of life negative. This is the problem. No drugs will ever change that. The patients need loving, tender care. Start giving them that to day. Talk to them, and hug them. And you are providing holistic medicine. Measure their quality of life when they come and when they go. If they feel better you have won. Ask them, when you see them next time, how things are going. If things are going better, and they function better, you have won. Give them a questionnaire at the beginning and in the end of

treatment. All therapists who want to document the patient's progress can use QOL10 freely (19).

And when evil-minded colleagues complain that you are harming and hurting your patients, simply show them your results. If they are good, they will never win. Even if they go to court with accusations against you which they quite often will. Don't worry about that. If you are doing good things just explain it to the judge, and he will understand. In the end good medicine is about helping patients, not about helping big companies making more and more money, and gaining more and more power. If you are a doctor, please side up with your patient and use the medicine that helps. When drugs don't help, stop using drugs and shift to non-drug therapy. Even if you are the lousiest therapist you will do much better by caring genuinely for your patient, and just talking with them, than by giving them drugs that do not work.

We would like to recommend further reading "The Institute of Medicine Report on Medical Errors" (20) and the recent papers on errors in biomedicine, which no doubt will be much more convincing to you than we have been in the short introductory to the subject above (a list of recent papers can be supplied on request from corresponding author).

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Review Articles

Manual biofeedback: A novel approach to the assessment and treatment of neuromuscular dysfunction

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Abstract

This paper introduces manual biofeedback, a hands-on neuromuscular therapy that incorporates numerous clinical features of other physical assessment and treatment protocols, including EMG-type biofeedback and manual muscle testing. The clinical and scientific rationale for the use of manual biofeedback is reviewed, including the assessment and treatment of a wide range of neuromuscular dysfunction caused by brain, spinal cord and local injury. This includes the full spectrum of so-called muscle “weakness” (abnormal muscle inhibition), including those with no detectable contraction. Manual biofeedback incorporates active (versus passive) patient participation throughout the rehabilitation process that enlists many of the neurological mechanisms between the muscle and brain, and brain and muscle (including the spinal cord). Instead of using mechanical sensors common in most biofeedback computerized devices, manual biofeedback integrates the practitioner’s sensory system as the primary sensor, much like traditional manual muscle testing procedures used to assess physical disability, and those employed during common neurological evaluations. Manual biofeedback is a clinical hands-on neuromuscular therapy that expands the scope and simplifies many traditional biofeedback-type therapies. It is a safe and inexpensive procedure that addresses the full range of neuromuscular problems, including common muscle imbalance, and muscle dysfunction associated with brain and spinal cord injuries.

Keywords: biofeedback, manual muscle testing, assessment, treatment, neuromuscular, muscle imbalance.

Introduction

Manual biofeedback is an uncomplicated neuromuscular therapy that expands the scope of traditional EMG-type biofeedback and other techniques that incorporate manual muscle testing. The full scope of manual biofeedback includes assessment, treatment and recommendations for home

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activities in patients with a wide range of neuromuscular problems; from common local muscle imbalance to more serious disability associated with brain and spinal cord injury. The various forms of muscle dysfunction associated with these problems include a pattern of abnormal muscle inhibition (“weakness”), including muscles with no detectable contraction, and hypertonic muscles.

Various forms of biofeedback therapy are commonly applied by healthcare professionals to help patients train, or re-train, muscles for improved function. This natural learning or training process is not unlike education or exercise. Physiological features of biofeedback are natural aspects of our evolution, with early humans using it instinctively for survival. For example, sensing uncomfortable temperatures humans sought ways to adapt through clothing, shelter and fire, and walking on rough surfaces led to the use of protective footwear. Today, taking our temperature with a thermometer, or exercising with a heart monitor are also common forms of biofeedback. In the 1930’s, Mowrer (1) may have been the first to develop a biofeedback instrument by inventing an alarm-based device for treatment of enuresis. The term biofeedback was coined in the 1960s by scientists who used more advanced instrumentation to train human subjects to consciously alter body function with sensory input to the brain. Beginning in the late 1970s, this author developed a biofeedback system for improving exercise and athletic training efficiency using heart rate monitor equipment (2).

The use of EMG-type biofeedback therapy can help patients with motor deficits learn to voluntarily control skeletal muscle (3). This may enhance neural plasticity in patients with brain injury (including cerebral palsy, stroke and traumatic brain injury), and spinal cord injury (4). Common local muscle injuries are often treated with various biofeedback-type therapies that incorporate manual muscle testing (5,6). The neurological mechanisms responsible for these improvements are not entirely clear. Feedback activation by sensory means, including visual, auditory and proprioception, may stimulate unused or underused synapses for motor control possibly creating new sensory engrams with resulting improvement in neuromuscular function (7).

Many variations of EMG-type biofeedback are currently used in clinical practice to help assess and treat neuromuscular dysfunction due to some type of brain, spinal chord or local muscle injury. These techniques are practiced by a variety of health care professionals, including medical doctors, physical therapists, psychologists and many others. In addition, various biofeedback techniques have been used for pain control, stress management, improving gut function, for reducing hypertension and to help reduce symptoms of depression. Many patients, families and other previously untrained individuals are taught to use biofeedback for personal health needs. Kegals exercises, for example, are used to help improve pelvic muscle function, and have been successful in helping those with sexual dysfunction, urinary incontinence, uterine prolapse and other conditions (8).

Manual muscle testing is a form of biofeedback, and commonly used for the evaluation of neuromuscular dysfunction in alternative medicine (2, 5,6) and recommended by the American Medical Association’s guidelines for physical impairment (9). The first textbook on manual muscle testing appeared in 1949 (10) to evaluate muscle weakness in polio patients, with newer editions in common use today for the evaluation of a full range of muscle dysfunction.

The author has utilized various aspects of biofeedback throughout his 30-year career in clinical practice, including one-on-one consulting of patients with common muscle deficits, patients with brain and spinal cord injuries, professional athletes and others, including both genders in all age groups. Most of this work relied on manual biofeedback with the purpose to: 1) obtain relatively rapid patient responses; 2) enlist patient participation in their recovery; 3) prescribe specific home-care training; 4) increase patient independence; 5) reduce health care costs; 6) broaden treatment locations (home-care, “on-the-field” athletic care, corporate coaching, etc.); 7) prevent future injury, re-injury, disability or reduced quality of life in patients undergoing rehabilitation; and 8) prevent injury, disability or reduced quality of life in otherwise healthy individuals.

Like other forms of biofeedback, the goals of manual biofeedback include enhancement of neural plasticity in patients with neuromuscular dysfunction to help improve or restore muscle function. In

addition, manual biofeedback may help the nervous system better compensate for permanent injury. For example, increasing function in synergistic muscles can help restore movement in a previously less mobile area due to a permanent muscle injury.

Manual biofeedback is best accomplished with a process of assessment, treatment and lifestyle re-training, with another step, prevention, also playing an important role.

- Assessment includes an evaluation of the neuromuscular system to help differentiate between normal and abnormal muscle function. An effective oral history, observing patient movement and other common procedures can contribute significantly to this process. The most reliable assessment is usually made through physical examination, including manual muscle testing. Other assessment tools (radiology, EEG, blood tests, etc.) are implemented as necessary. A re-assessment process will also be implemented as discussed below.
- Treatment involves the use of manual biofeedback as a sensorimotor stimulation to help improve or restore neuromuscular activity (motor control), as detailed below.
- Lifestyle re-training involves strategies that include patient education and participation in daily physical tasks at home that utilize or attempt to utilize muscles previously unused (or poorly used) due to previous injury. One goal is to increase neuromuscular function and overall independence. The loss of functional independence is common after muscle injury. For example, muscle dysfunction associated with stroke can cause significant reduction in quality of life (11).
- Manual biofeedback can also be used as a preventive measure to help relatively healthy individuals reduce the risk of future physical disabilities. Age-related reductions in neuromuscular function are common, and contribute to declining physical ability and increase the risk of falls in the elderly (12). In people 65 years and older, falls are the leading cause of injury-related death and the

third leading cause of poor health and lower quality of life (13).

Manual versus traditional biofeedback

EMG-type biofeedback treatments usually entail placing surface electrodes (the most common type used) on the skin over the affected muscle with the other ends connected to a computer's biofeedback program that senses the muscle's electrical activity. When the muscle is consciously activated it can trigger an auditory (such as a particular sound) and/or a visual cue (such as a brightly colored indicator) to help the patient sense that the muscle has contracted.

Manual biofeedback utilizes an approach similar to many EMG-type therapies currently in use, but without the equipment (including various kinds of hardware, software, electrodes, etc.) normally required during traditional biofeedback sessions. Instead, manual biofeedback relies on the practitioner providing feedback while helping the patient train their sensorimotor system. This is accomplished through verbal, visual, tactile and proprioceptive cues which are more personal than equipment, and help further enlist the patient's participation and motivation. These combined factors may help increase the sensory input to the brain more than traditional EMG-type biofeedback due to sensory activity from various sources. The addition of controlled body movements (passive and/or active) during therapy may also improve clinical response. For example, instead of the patient lying on an exam table attempting to contract a given muscle, a manual biofeedback session incorporates several areas of increased proprioception. In the example of performing manual biofeedback on the triceps brachii muscle, the practitioner firmly holds the arm in a position that stimulates proprioception from joints (shoulder and elbow), skin, ligaments and tendons, and other surrounding muscles, including the triceps itself. The practitioner provides additional verbal and visual feedback when muscle contraction is felt while the arm is held in the most appropriate biomechanical position for contraction of the triceps muscle.

Another advantage of manual biofeedback is it provides patients with direct and immediate sensations regarding the ability to contract a muscle

that could not previously move, or move effectively. It encourages the patient to use their own sensory and motor neurons, producing movements entirely within the patient's physiology, not relying on external electronic equipment. This may also help improve patient compliance with home follow-up use of the muscle, associated joint movement and real-life physical activity.

There are a number of potential drawbacks of EMG-type biofeedback. Electromyography can be a complicated and tedious technique (14,15). Acquiring and processing the electrical activity accurately can be a difficult task due to physiological, anatomical and technical issues. The process, which relies on visual, auditory or mechanical stimulation, requires a certain level of competency on the part of both the patient and operator, which can reduce effectiveness. Operator bias may sometimes be a factor.

Due to their anatomical locations, a number of very important muscles are not accessible to surface electrodes. These include the psoas major, iliacus, piriformis, some rotator cuff muscles, tibialis posterior and others. To assess and treat these muscles using biofeedback equipment, fine-wire electrodes are required, an invasive procedure not recommended for many biofeedback operators as more training in this technique is required (and often not within their legal scope of practice). In addition, traditional biofeedback equipment may not be practical in all situations, such as treating a patient at home or an athlete in their competitive environment. These and other reasons are associated with reduced reliability of EMG in clinical practice (16). Frequent upgrades in EMG equipment and additional technology training can also be a significant added health care expense.

A significant difference between EMG-type biofeedback and manual biofeedback has to do with "static" versus "task-oriented" therapy. Most EMG biofeedback sessions take place with patients sitting or lying, encouraging "static therapy." While the contraction of a previously unused muscle is a significant first step in successful therapy, achieving this activity statically may have much less clinical value if that muscle is not re-trained in an active fashion. Huang et al (4) reviewed numerous studies and concluded that the effect of static-oriented biofeedback training on the patient's daily life, such as walking, eating, reaching, etc., appears less

effective; many studies concluded that little, if any, clinical effect took place, even when muscle contraction was restored during EMG-type biofeedback sessions.

For the past 30 years, the author has regularly used what is now called a "task-oriented" biofeedback approach. This strongly encourages the interaction between the patient's neuromuscular improvements obtained in the clinical setting with their home environment. For example, a patient unable to stand is given the goal of rising from a seated position to maintain a standing posture. Following an initial response in key muscles, including the quadriceps femoris, psoas major and gluteus maximus, for example, the sitting-to-standing movement can be attempted in the clinical setting. It may also require isolation of only one part of a group, such as the rectus femoris (part of the quadriceps femoris group). Or, it may involve treating a muscle in a different position than traditionally recommended, considering even slight variations in muscle attachments, muscle compensation and other factors. Immediately following the ability to contract some dysfunctional muscles, the patient is taught to incorporate the same activity at home, with supervision if necessary. Follow up sessions enable the practitioner to evaluate for and treat additional muscle dysfunction that may not have been evident initially due to neuromuscular compensation, pain or other variables. This approach allows for more specific and complete physical activity prescriptions as activity levels improve.

The task-oriented approach has been shown to offer better clinical outcomes than static-oriented biofeedback (4,17-19). In the example above, the patient can begin training for real-life situations rather than just be able to contract part or all of a muscle while lying on an exam table during a biofeedback session.

Today's health care environment has also created a serious problem with high-cost technologies, unnecessary procedures and office visits due to insurance and other factors that add to healthcare costs. Expensive biofeedback hardware and software, the need to obtain the "newest" technologies, replacement of clinical science seminars with marketing seminars and other health-care concerns has resulted in reduced efficacy of care and removing participation and responsibility of the patient with the

end result of continued disabilities and lower quality of life for many patients.

Evaluating the muscle's state of facilitation and inhibition is an important assessment goal in manual biofeedback. The words facilitation and inhibition are best used to describe the contraction and lack of (or reduced) contraction of skeletal muscles, respectively. The central state of the alpha motoneuron is a reflection of multiple facilitation and inhibitory effects, the final outcome being either facilitation or inhibition. Excitation occurs when facilitation reaches the threshold for depolarization, where the "all-or-none" phenomenon takes place and a muscle contracts. Facilitation occurs at the neuromuscular junction, with an action potential traveling the length of the muscle fiber resulting in facilitation and contraction. Inhibition of the motoneuron occurs postsynaptically (and presynaptically on some neurons) and results in the decreased likelihood of contraction of the muscle.

Manual biofeedback predominantly addresses abnormal muscle inhibition (the so-called "weak" muscle) considered the primary neuromuscular problem caused by the original injury. In most cases, abnormal muscle over-facilitation (often referred to as the "tight" or hypertonic muscle) can be considered a secondary compensation resulting from the injury which first caused the primary muscle inhibition (see Figure 1). Neckel (20) states that abnormal muscle inhibition in patients with brain injury can be attributed to disruption in descending neural pathways leading to inadequate recruitment of motoneurons, contraction of antagonist muscles, or both.

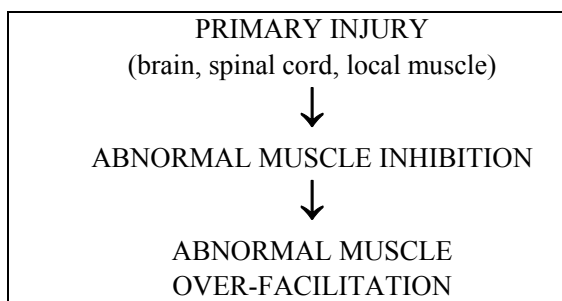


Figure 1. Common pattern of neuromuscular injury leading to muscle imbalance.

An important goal of manual biofeedback is to help improve or restore normal neuromuscular function. The phrase "muscle function" refers to the

normal movement of the muscle and appropriate balance of facilitation and inhibition. Treatment is usually directed at the abnormally inhibited muscle; improving this muscle problem can also help improve over-facilitated muscles by reducing tightness, help improve joint movement and gait, and assist in restoring overall function and lifestyle independence.

Various terms are used clinically to describe the various forms of abnormal inhibition and facilitation. In children, specific definitions of abnormal muscle inhibition have recently been established. A consensus meeting in 2005 at the National Institutes of Health developed definitions for certain terms related to muscle dysfunction (negative motor signs) in children (21). The following definitions were established:

- Weakness: the inability to generate normal voluntary force in a muscle or normal voluntary torque about a joint.
- Reduced selective motor control: the impaired ability to isolate the activation of muscles in a selected pattern in response to demands of a voluntary posture or movement.
- Ataxia: an inability to generate a normal or expected voluntary movement trajectory that cannot be attributed to weakness or involuntary muscle activity about the affected joints.
- Apraxia: impairment in the ability to accomplish previously learned and performed complex motor actions not explained by ataxia, reduced selective motor control, weakness, or involuntary motor activity.
- Developmental dyspraxia: a failure to have ever acquired the ability to perform age-appropriate complex motor actions that is not explained by the presence of inadequate demonstration or practice, ataxia, reduced selective motor control, weakness, or involuntary motor activity.

The more extreme conditions of abnormal over-facilitation are generally referred to as hypertonic muscles, and include spasticity, dystonia or rigidity. Differentiating between these states in clinical practice is very difficult (22), and usually not a

primary goal of most clinicians. Hypertonic muscles are associated with an injury to the motor pathways in the cortex, basal ganglia, thalamus, cerebellum, brainstem or spinal cord (23). Treatments directed primarily at hypertonic muscles are often unsuccessful. For example, treating spastic muscles usually does not improve overall long-term function, such as gait, or significantly improve associated abnormal muscle inhibition (24). Yelnik et al (25) stated that “extensor muscle overactivity is one, but rarely the main, component underlying gait disorders in stroke hemiplegics. The real role of spasticity as a cause of this symptom is clinically difficult to assess.” Many other therapeutic approaches, including some EMG-type biofeedback techniques, surgery and other therapies, treat over-facilitated (hypertonic) muscles instead of the abnormally inhibited ones (26-31). Tight flexor muscle groups, for example, are typically seen in various types of brain-injured patients. Neckel et al (20) showed that stroke patients were “stronger” (i.e., “tighter”) than the control group in knee extension only, but “weaker” in most other lower limb movement. Abnormal over-facilitated muscles also are associated with localized pain, and their presence can, secondarily, further reduce function of muscles that are abnormally inhibited.

The general terms “weak” and “strong” are often used when referring to abnormal inhibition and facilitation, respectively; these terms have also been used in relation to abnormal and normal research outcomes, as well as to electromyography differences (32-34). But these terms can be confusing to practitioners and patients alike if not properly defined. Muscle function refers to the normal movement of the muscle and appropriate balance of facilitation and inhibition, regardless of strength and power (2). Muscular strength is the maximum force generated by the muscle, or the maximum weight a person can lift at one time. The definition of power includes a time component; power is the combination of strength and speed of a movement. A muscle that functions well may have a high or low level of power or strength. Even a very powerful weight lifter can have muscle inhibition, and the weakest elderly patient can have muscle facilitation. Strength and power are separate from inhibition and facilitation in the initial assessment and treatment component of manual biofeedback. Muscular power should improve in a

given muscle during re-training, with continued improvements as regular physical activities are resumed.

Manual biofeedback should be seen as a complete neuromuscular therapy. In addition to the reduction or loss of muscle function, other neurological deficiencies associated with the muscle include components on the motor side – the motor cortex, the upper and lower motor neuron, the motor end plate and other neuromuscular components – and the sensory side beginning with proprioceptive elements within the muscle, joints (and perhaps the skin) and back up to the sensory cortex in the brain (see figure 2). Manual biofeedback addresses this entire neuromuscular loop. Successful treatment of abnormal muscle inhibition and appropriate re-training can help improve function of these mechanisms, which can improve voluntary muscle function, skilled motor tasks and gait resulting in reduced disability and improved quality of life.

Unfortunately, in the current therapeutic environment, many patients are not successfully treated as indicated by continued significant disability even following long periods of rehabilitation. Many others are untreated, in part due to preconceived ideas regarding treatment efficacy by clinicians. Stroke patients, for example, are traditionally seen as “non-responders” following the chronic phase (several months post-injury) of their recovery (35). Others claim that most recovery in those with neuromuscular dysfunction associated with hemiparesis primarily occurs within the few months following injury (36, 37). However, the potential to successfully treat these types of patients, and many others, exists through improved assessment, treatment and lifestyle re-training. In recent years, animal and human studies have shown that the brain is capable of extensive functional recovery, even in adults. For example, the motor cortex can reorganize rapidly in response to various stimuli (38-40).

As key components of the neuromuscular system, skeletal muscles are obviously important for bodily movement. But, interestingly, even children born with brain injury who have never used certain muscles for movement still maintain sufficient muscle mass at five or ten years of age, and older, to begin manual biofeedback and immediately obtain conscious muscle contractions.

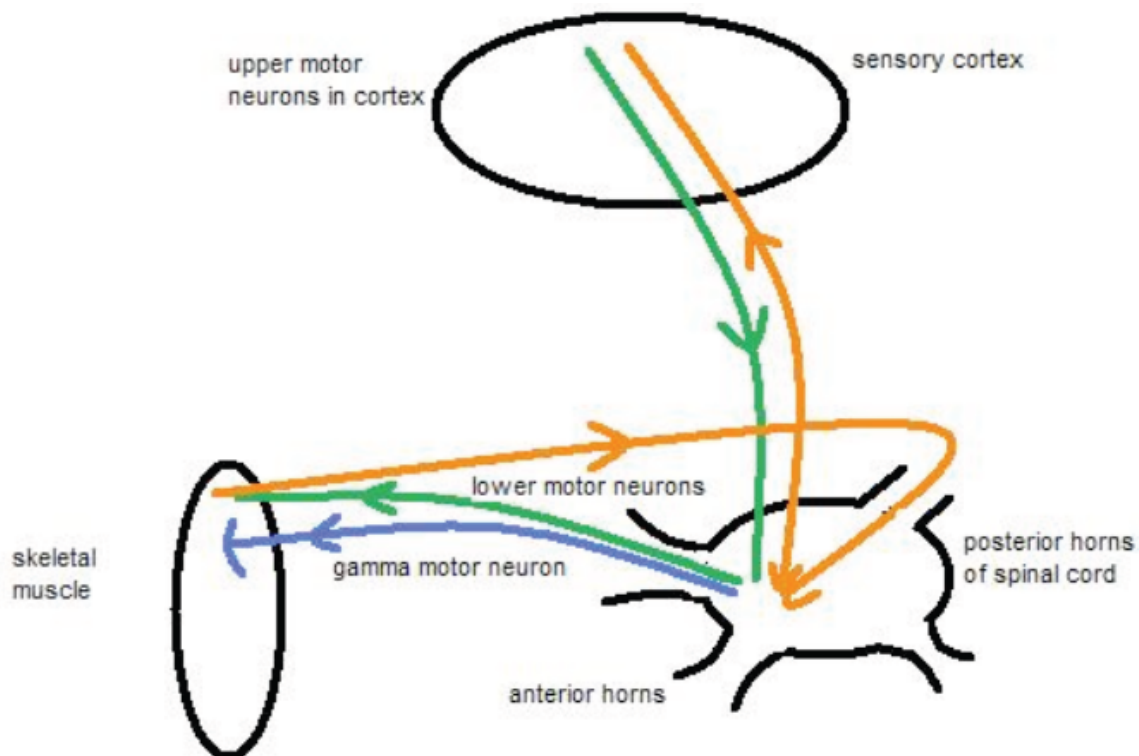


Figure 2. Schematic of sensory and motor relationships.

The presence of muscle tissue is due to other functions of muscles that include metabolic (converting fat and sugar to energy), immune (significant antioxidant activity) and circulatory (containing a substantial volume of blood and lymph vessels) activity.

Manual muscle testing

Knowledge of manual muscle testing and biomechanics are among the necessary components for using manual biofeedback (and most EMG-type biofeedback) because the ability to isolate a muscle's action during treatment is important for optimal muscle-brain communication. Traditional muscle testing results are sometimes categorized on a scale of 0 to 5 (10):

0. no contraction.
1. trace of muscle movement, but no limb or joint movement.
2. minimal movement but not against gravity.

3. movement against gravity but not against resistance by the examiner.
4. movement against minimal resistance by the examiner.
5. movement against resistance (so-called "normal").

In patients with brain and spinal cord injury, abnormal muscle inhibition typically ranges from 0 to 4 on this scale, with many categorized as 0 and 1. Common local muscle injuries typically are in the scale range of 2 – 4. Most skilled practitioners can manually feel muscles working at the level of 1 and higher.

An alternative scale assesses muscles as either normal or abnormal. The normal response to a muscle test is normal facilitation (or normal inhibition depending on body position). Abnormal test outcomes include abnormal inhibition, where the muscle's inhibited state is not what is expected, or abnormal facilitation, where the muscle is over-facilitated. A normal response to a muscle test is exemplified when the muscle can successfully contract despite the stress placed on it in the form of an opposing force, such as

from the practitioner. Likewise, if a muscle is unable to maintain its normal contraction in the correct test position, it is considered abnormal. The abnormal responses observed in muscle testing may possibly be the result of an inhibition of the central integrated state, or functional status, of the muscle's motoneuron pool despite conscious descending excitatory inputs. Leisman et al (33) found significant electromyography differences between normal and abnormal muscle tests and also identified differences in somatosensory evoked potentials between these two states.

A variety of physical, chemical and emotional states can affect muscle function, and it is important that the practitioner be aware of these. They include body position, hydration and pain (muscle testing that elicits pain can still be effective if the pain is not severe or does not cause inaccurate positioning during the test). A discussion of these factors goes beyond the scope of this paper.

Manual biofeedback procedures

As noted above, the use of manual biofeedback involves assessment, treatment and re-training. In addition, a re-assessment should be part of the process, especially at the end of the first session and the onset of the next. These four clinical stages are as follows:

1. Initial Assessment. Before applying any therapy, a complete evaluation is necessary to help determine the specific muscle or muscles that are primarily at fault. This process can help eliminate the need to treat secondary muscle problems that may self-correct when the primary muscle(s) improves its function. This may be possible because specific muscles are controlled by areas in the motor cortex that overlap (41).

Assessment involves performing manual muscle tests on any and all muscles that may be associated with the patient's disability. This may include patients with only mild deficiencies to those with serious injury and zero muscle function (along with many over-facilitated muscles).

2. Treatment using manual biofeedback addresses the most important inhibited muscles based on the patient's need. Two examples are provided.

Case one

A patient with a history of stroke may have an over-facilitated biceps muscle and abnormally inhibited triceps muscle, with the elbow and shoulder maintained in flexion. Applying manual biofeedback to the triceps muscle may be the preferred initial treatment. With success – improved triceps contraction – there may also be a reduction in the contractile state of the biceps muscle, and improved movement of the elbow and shoulder joint.

Case two

A child with brain injury is unable to stand unaided in a normal posture because the ankle is in a plantar-flexed state. Abnormal inhibition of the tibialis anterior muscle, not allowing adequate ankle dorsiflexion, and over-facilitated posterior calf muscles are common findings that restrict normal posture. Treatment of the tibialis anterior can result in improved dorsiflexion, reduced posterior calf over-facilitation and improve the ability to place the feet flat on the ground.

Following an assessment process that determines at least one specific abnormal muscle inhibition, treatment consists of four components:

- Demonstrate to the patient the movement that needs to be made, with the practitioner first using his or her own limb as an example. This visualization helps the brain better understand the movement that must be made. It may sometimes be helpful to evaluate a normal muscle in a patient's unaffected area to more fully demonstrate the actions described here.
- Passively move the patient's limb as if the muscle was contracting. This stimulates proprioception from the joint(s) and other areas in and around the muscle being treated.

- Physically stimulate the skin and soft tissue around the muscle, and surrounding areas, providing both superficial and deep tactile pressure to obtain additional proprioception.
- Accurately position the muscle (as if performing a traditional manual muscle test) and ask the patient to contract the muscle. The practitioner should “push” or “resist” with at least equal counter pressure. Initially, it may be impossible for the patient to create any muscle activity. However, in most individuals some small amount of muscle contraction takes place quickly, sometimes within one to two minutes in more severe cases. Once noticeable muscle movement takes place, the neurological components have created a completed neurological loop as discussed above and shown in figure 2. The “pushing” or “resisting” process should be repeated several times within the normal range of motion for the muscle, with a few seconds rest in between, and maintaining the muscle contraction for up to about five or more seconds.

Total treatment time will vary with each patient based on how many muscles are treated. Each muscle that begins to contract will have a time limit before fatigue becomes the limiting factor, with overall fatigue during a session also a consideration. It is best to end previous to the onset of significant fatigue as further training may be counter productive and could even be considered “overtraining.” In difficult cases, the minority in the experience of the author, it may take more time to get an initial muscle response. This may be due to a lack of comprehension on the part of the patient, poor technique by the practitioner (most commonly from poor isolation of the muscle) or other issues. Experience seems to indicate that severity of injury is not associated with a lack of initial response. During a non-responsive period for a given muscle, the practitioner can repeat the process described above.

3. Re-assessment of the muscles treated takes place at the end of a manual biofeedback session. Following treatment of all muscles during one session, note how each muscle

responded and on what level of quality using some scale (such as the 0 to 5 scales noted above, or just that the muscle contracted, or the joint moved, etc.). Reassessment of other indicators directly associated with muscle function is also important, including posture, gait, pain, range of motion, etc. The same re-assessment process can also be employed at the onset of the next follow-up manual biofeedback session, which can help determine the extent of any improvement or regression since the previous session.

4. Re-training is a key component of manual biofeedback, and involves home recommendations to move the muscle(s) previously treated. Once some level of neuromuscular function is obtained in the clinical setting, the patient must move or attempt movement of that muscle and related joint. The patient, and if necessary, a support person, such as a health care professional or family member, must be given adequate home instructions to accomplish this task. Once patients experience muscle contraction during initial sessions, they usually can reproduce it again at home. Specific recommendations are difficult to suggest here, but two components are important.
 - First, each muscle that was successfully treated should be moved the same way at home. Most patients can reproduce the results of their biofeedback results at home, including muscle contraction with resistance either by the patient but more effectively by another person. Some patients can create movement without assistance.
 - Second, the muscle should be given some additional physical activity within its range of motion, depending on the patient’s capability. For example, a patient with an over-facilitated biceps muscle whose triceps muscle was treated may be able to extend the elbow more than they were able previous to manual biofeedback. This action should be attempted several times, or more, daily,

incorporating the action into daily activity such as reaching for objects, eating, combing the hair, etc. In the case noted above, the patient with tibialis anterior dysfunction who was unable to stand flatfooted before treatment but can stand more flatfooted after treatment must also train their tibialis anterior muscle at home for daily activity, such as placing the feet flat on the floor while seated or standing.

The frequency of manual biofeedback sessions depends on the patient's need. With proper assessment, treatment and follow-up home care, a second visit between one and four weeks after the first should begin with a reassessment. If the muscles that were successfully treated the first session are still able to contract (even a very small amount), the practitioner and patient can rely on home care to continue training these muscles while the current session addresses the needs of other muscles.

Variations in muscle and joint positioning during a manual biofeedback session can also be useful in some patients. This can help improve the overall therapeutic outcome by incorporating additional muscles performing a similar task, or encouraging the recruitment of lesser-used muscle fibers. For example, instead of isolating an individual muscle, incorporating a muscle group, such as the hip flexors, may be more practical. This helps mimic common day-to-day physical activity. Wolf (19) refers to this as conditioning the entire reflex rather than an individual muscle.

Another possible variation includes positioning a muscle and joint differently than is commonly done, such as increasing elbow extension for the triceps or reducing hip abduction for the tensor fascia lata.

Drawbacks and additional uses

One drawback of manual biofeedback may be that some patients with no apparent muscle activity may respond to biofeedback with such minimal levels of muscle contraction as to not be detected by the practitioner. In these instances, simple and inexpensive EMG biofeedback equipment, so-called

“portable” units, may be an advantage during the initial session or sessions. This is especially helpful in very young children or those with serious brain injury who are unable to understand the simple commands necessary for manual biofeedback. In most cases, however, follow up sessions can be performed manually without any EMG equipment.

Based on the experience of the author, there may be additional uses of manual biofeedback not described here. In athletes with normal muscle function, for example, incorporating more muscle fibers during a given muscle contraction may help improve athletic power, training and competitive performance. Using manual biofeedback in this capacity could have significant potential in sports medicine.

In musicians and others requiring fine motor skills, increasing muscle function in the small muscles of the hand, for example, may improve certain aspects of playing an instrument. In addition, incorporating manual biofeedback with electroencephalogram (EEG) therapy may augment the clinical outcome of both forms of biofeedback.

As described here, manual biofeedback may reduce the need for other commonly used physical modalities, including many popular hands-on therapies. In doing so, this can further reduce healthcare costs, including lowering malpractice insurance rates.

Conclusions

This paper introduces manual biofeedback, an assessment and treatment protocol for neuromuscular dysfunction. The approach can help broaden the application of traditional biofeedback as a safe, effective and inexpensive treatment for individuals of all ages with brain, spinal chord and local injury affecting motor function. Experimental and clinical protocols to evaluate the efficacy of manual biofeedback are yet to be implemented but may help to better understanding how the injured brain and body can repair and restore function to neuromuscular mechanisms.

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Eating disorders from a holistic point of view

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Abstract

Virtually all teenage girls and young women have to some extent an eating disorder and some research has shown to covariate with the intensity of psychosexual developmental disturbances and sexual problems. We suggest simple psychosexual (psychodynamic) explanations for the most common eating disorders like anorexia nervosa, bulimia nervosa, and binge eating disorder and propose the hypothesis that eating disorders can be easily understood as symptoms of the underlying psychosexual developmental disturbances. We relate the symptoms of the eating disorders to three major strategies for repressing sexuality: 1) The dispersion of the flow of sexual energy - from the a) orgasmic potent, genitally mature ("vaginal") state via the b) more immature, masturbatory ("clitoral") state, and further into the c) state of infantile autoerotism ("asexual state"). 2) The dislocation from the genitals to the bodies other organs, especially the digestive and urinary tract organs (the kidney-bladder-urethra) giving the situation where sexual energy is accumulated and subsequently released through the substituting organs. 3) The repression of a) free, natural and joyful sexuality into first b) sadism, and then further into c) masochism. We conclude that the eating disorders easily can be understood as sexual energies living their own life in the non-genital body organs, and we present results from the Research Clinic for Holistic Medicine, Copenhagen, where eating disorders have been treated with accelerated psychosexual development. We included the patients with eating disorders into the protocol for sexual disturbances and found half these patients to be cured in one year and with 20 sessions of clinical holistic therapy.

Keywords: Adolescent, eating disorders, integrative medicine, holistic medicine.

Introduction

Virtually every teenage girl on the western hemisphere – and most women between 12 and 35 years– has an eating disorder to some extent. Working as physicians in general practice we have observed not only a high prevalence of severe eating

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disorders like anorexia (the general loss of appetite or disinterest in food), anorexia nervosa (the intended weight loss by starvation, over-exercise, purging etc.) and bulimia nervosa (the cyclical, recurring pattern of binge eating often followed by guilt, self-recrimination and compensatory behavior such as dieting, over-exercising and purging) (see list of the eating disorders listed in ICD-10 in table 1 (1)), but also a number of milder disorders that less often are put into diagnoses followed by medical treatment, like *binge eating disorder* (uncontrolled bursts of overeating followed by compulsive vomiting), *extreme and obsessive weight control* (often by patients with a normal weight) where the bathroom weight are used several times a day, and *obsessive, neurotic attitudes to food* i.e. a too large importance attributed to avoiding calories, or carbohydrates, or fat, or even the compulsive abandonment of a single food items like white sugar, white bread etc.

Other expressions of this are *extreme exercise-programs* sometimes even encouraged by the physician, and *vanity that converts into a compulsive drive for being as slim as the commercial fashion-models*. The girls often present severely disturbed body images in combination with either an antisocial behavioral pattern with withdrawal and social isolation (antisocial or severely disturbed personality), or a strong dependency on the confirmation of their value as a person from peers and parents (dependent personality type), or a need for constant appraisal of the bodies' sexual value from boys (hypersexual behavior). So the closer we look at the appetite dysregulations, the more they seem deeply connected to psychosexual factors.

Therapists who work with young female patients with eating disorders often notice that there seem to be both a mental (psychoform) and a bodily (somatoform) aspect of the problem. The patient's mind often carries a lot of thoughts and ideas about the vital importance of not getting too fat and ugly, combined with feelings of shame and guilt from not being able to control the eating habits, etc. The patient's body often seems to live its own life. Some times it is compensatory attracted to food, at other times strongly repelled by food, and at other times again not interested in food at all.

Often the phases vary in a cyclic, rather predictable way. In anorexia, food is simply not of

any interest; in anorexia nervosa there is a battle in the patient not to eat in spite of an urge for eating; in bulimia we have the compensatory overeating, and in bulimia nervosa we have the inner conflict between one part of the patient that want to eat and an other that do not. In bingeing the striving is for simply filling the stomach and thereafter emptying it totally again, releasing all tension. The emotional character of the eating disorder has made them difficult to treat with behavioral therapy; it has not been able to treat them successfully with drugs either. So most patients suffer from their eating disorder the first 20 years after early puberty; after that is normally tend to burn out – as to the sexual urge.

There are many scientific speculations about biological reasons for the eating disorders - the same way psychiatrists for a hundred years now have speculated in possible biological reasons for mental illnesses; but neither has till this day showed genetic or any other clear scientific evidence for being “hardwired” in the human nature. It is often said that the eating disorders disturb other aspects of the patient's life, including her sexual life, but this is most likely to be the other way round: the eating disorder is a symptom of a deeper psychosexual disturbance.

It is worth to speculate that the problems started with puberty and gradually goes down (“burns out”) during the next 20 years until the 35-year old woman, who statistically have come to know her body and sexuality by getting rid of her eating disorder, or at least of its symptoms. The close association in time and intensity is a strong clue that eating disorders might be causally linked to sexuality.

Psychosomatic and psychosexual research has in accordance with this shown sexuality to be closely linked to the eating disorders. Morgan et al (2) found that anorectics were less likely than bulimics to have engaged in masturbation and also scored lower on a measure of sexual esteem, and both groups exhibited less sexual interest and more negative affect during sex than did a normative sample (2). Abraham et al (3) found that bulimic patients were more likely to experience orgasm with masturbation, were more likely to have experimented with anal intercourse, and were more likely to describe their libido as “above average”, while their controls were more likely to experience orgasm during sexual intercourse (3). Raboch and Faltus (4) found that “primary or

secondary insufficiencies of sexual life were found for 80% of the anorectic patients” (4), while Raboch (5) found that sexual development of patients with anorexia nervosa was accelerated in the initial stages.

Sarol-Kulka et al (6) found in a pilot study that the anorectic patients showed interest in the opposite sex at an earlier age than patients with bulimia; however, the anorectic females, more frequently than bulimic, reported that these interests were never realized. 36% of patients with anorexia and 29% of patients with bulimia had no sexual initiation. When evaluating the negative aspects of their own sexuality, 28% of patients with bulimia and 9% of patients with anorexia reported difficulties in achieving orgasm; 13% of bulimic and 9% of anorectic females reported difficulties in getting aroused, 22% of bulimic and 17% of anorectic females reported fearing the sexual initiation (6).

Handa et al (7) found that 16.3% of patient with eating disorders had been physically abused and Sanci (8) found that childhood sexual abuse happened 2.5 times as often as normal with patients that later developed bulimia; the patients who developed anorexia did not show this association. Although the picture is not at all clear, and even somewhat contradictory, research has shown a strong association between sexuality and eating disorders. In science we must agree that our present understanding of sexuality is messy and unclear in itself that this most likely is the reason for the messy conditions of the research; we actually believe that it is the incomplete understanding of sexuality itself in the mind of the researchers that is the major hindrance for shedding light into this.

As we aim to improve our present state of understanding we have incorporated into this paper a number of classical and modern theories of sexuality and psychosexual development. We believe that this synthesis is of clinical value and have, after working 10 years with holistic sexology in the clinic setting (9-25) developed a holistic sexological cure for the eating disorders that we have tested with success on several patients. We therefore want to present our theoretical understanding to make a basis for further research in clinical holistic medicine both in Denmark and in other countries (this chapter is a part of the Open Source Research Protocol for Clinical Holistic Medicine, that includes all the published strategies for

helping the patients with clinical holistic medicine (CHM) and the obtained results from the clinical practice, to be found at www.pubmed.gov, search for papers with “clinical holistic medicine” in the title).

Table 1. The 2007 ICD-10 list of eating disorders and sexual disorders. Notice the similarities

(F50.) Eating disorders
(F50.0) Anorexia nervosa
(F50.1) Atypical anorexia nervosa
(F50.2) Bulimia nervosa
(F50.3) Atypical bulimia nervosa
(F50.4) Overeating associated with other psychological disturbances
(F50.5) Vomiting associated with other psychological disturbances
(F50.8) Other eating disorders
(F50.9) Eating disorder, unspecified
(F52.) Sexual dysfunction, not caused by organic disorder or disease
(F52.0) Lack or loss of sexual desire
(F52.1) Sexual aversion and lack of sexual enjoyment
(F52.2) Failure of genital response
(F52.3) Orgasmic dysfunction
(F52.4) Premature ejaculation
(F52.5) Nonorganic vaginismus
(F52.6) Nonorganic dyspareunia
(F52.7) Excessive sexual drive
(F52.8) Other sexual dysfunction, not caused by organic disorder or disease
(F52.9) Unspecified sexual dysfunction, not caused by organic disorder or disease

Oral sexuality, sexual repression and eating disorders

The Freudian concept of oral sexuality is little understood by contemporary physicians and psychiatrists (26), but Freud’s concept was acknowledged by the whole tradition of psychoanalysts and psychodynamic researchers and therapists from the last century including Jung (27) and Reich (28,29).

Case Study

Female patient 36 years old

The patient tells her story about an eating disorder (bulimia nervosa) starting when she was 16 years, a little before she became sexually active. She had this condition until recently – first when she was 30 years old did she have spontaneous remission from it - in spite of many years of cognitive psychotherapy. She was first treated on an individual basis at the University Hospital Psychiatric Clinic; then she came in a bulimia psychotherapy group for 18 month, when she was 20-21 years old, followed by 6 years in individual psychotherapy with a female experienced psychologist. The focus of the therapy was getting control over the eating habits. She reported that she always had big problems with desire, getting sexually aroused, and getting satisfactory orgasm, and she complains about a life-long history of unsatisfactory sexual relationships. She explained that her bingeing was motivated primarily of the extremely relaxed and happy feelings she got after filling her stomach completely until it almost busted, and then immediately after emptying again completely by vomiting. The process itself was not really emotionally rewarding, neither the eating part of it nor the vomiting part, but the total bodily relaxation was what she was really after. Only after she learned how to relax and go with “the flow in life”, letting go of controlling everything, did the eating disorder leave her. It seemed that the therapy was unproductive, because it aimed at helping the patient getting control, not at helping the patient to learn to let go of the control.

Freud believed that sexuality during the child’s psychosexual development traveled from the mouth to the anus (and bladder), until it reached its final destination in the genitals. Reich had a somewhat different understanding, as he believed that the sexually healthy little girl had genital sexuality, and only when she was denied her “genital rights” i.e. by being punished for masturbation, would she repress her sexuality away from the genitals and into the other organs. Freud also had the idea of sexual development from infantile autoerotism into the more mature masturbatory, clitoral sexual competency, before the girl finally reach genital maturity and able to have

sexual intercourse. Reich believed that whenever sexuality became repressed it was kept by the body-
amour and the muscles of the body. So when sexuality was repressed, it moved into the tensions of the body, and thus out of reach and use for the patient (28). Today we know in theory three ways for sexuality to become repressed – three neurotic strategies for getting rid of a sexuality that cannot be contained in the patient’s childhood environment:

- *Repression of sexual energy by destroying the sexual ray of energy:* from the genital state (orgasmic potency) to “infantile autoerotism” (lack of orgasmic potency).
The first is the repression of the sexual energy, from flowing freely through the genitals allowing the person so engage in sexual intercourse, to the more restricted masturbatory state, where the sexual energy still can be used for pleasure raising a sexual circle, but only within the person herself, into the still more futile and useless state of infantile autoerotism, where sexual energy cannot any longer form a beam of energy and flow, but only hang as a cloud of sexual energy (a sexual quality or “odor”), just barely allowing the observer to identify the gender of the person. The infantile autoerotism is the typical sexual state of the schizophrenic patient; in psychodynamic theory the lack of sexual interest in the world from this state is one of the suggested reason for autism.
- *Repression of sexual energy by displacement from the genital to other organs – sexualisation of the digestive system.* When sexuality cannot be accepted by the girl’s parents it can still survive by being transformed into emotional charge associated with eating, defecation and urination. The mouth, intestines, anus and bladder can, as observed already by Freud carry enormities of charge of sexual energy. The reader that doubts this might recall Gräfenberg study from 1950 where he quite surprisingly documented the very important role of the urethra in many women’s sexuality (30). This means that the sexual energies in many ways

can be preserved, but disguised, as sexual emotions connected to non-sexual organs; the joy associated with the later is obviously often much easier to accept for the parents: The little girls is cute when she eats; she is even cute when she goes to the bathroom, but she is definitely naughty and not-so-cute when she plays with her own genitals. So the displacement of sexual energies turns her, if she is raised in a sex-negative environment, into a socially acceptable person. If we compare the eating disorders with the sexual disorders, it is quite interesting to see how parallel these two lists are (see table 1). Of course this psychodynamic understanding of body and sexuality might seem rather incomprehensible, if you are unwilling to acknowledge sexual energies as the fundamental vital energies in the human being, as did Freud, Jung, Reich, and so many of the other great psychologists and physicians of the last century. But if you can follow this scheme of thinking, then you can also examine your female patient presenting an eating disorder for a deeper layer of psychosexual developmental disturbances, that could be corrected, and by doing so you can help the young woman not only to get rid of her eating disorder, but also of other more existentially important problems related to a poorly developed sexuality.

- *Repression of sexual energy by degeneration into sadism and masochism.* A third way sexuality could be repressed is as sadism and masochism. The idea that sexual repression leads to masochism, which is perhaps most strongly and clearly expressed by Reich in his book "Character Analysis" (29), is that sexuality basically calls for meeting with the opposite sex, in an active, aggressive way. Sexual aggression is thus the most natural thing with both sexes, although the expression of male and female sexual aggression is very different, the male aggression often looking like sexual violation and harassment, while the female aggression often is looking more like seduction and "hooking". When sexual aggression becomes

blocked, i.e. when the girl is told not to be so sexually challenging to the boys in the way she dresses and acts, or when she is sexually neglected of the father and other boys and men who she is depending on interacting with for her psychosexual development, her sexuality first turns into evil sexual intent (i.e. sexually torturing the boys by rejecting them or slating or intimidating them); the logic in this is that sexuality still exists, because it breaks through the barrier using force (which is sadism). If sadism is also repressed, the flow of sexual energy is turned inwards, instead of outwards (which is masochism). So masochism is basically sadism turned inwards towards self. If the reader wonders how sadism is created from sexual energy turned evil, we refer to our explanation of evilness in general in the Life Mission Theory (31-39). This theory explains how and why all intents seem to turn evil, when they cannot be realized by the little child (36).

Sexual theories for anorexia nervosa, bulimia nervosa and binge eating disorders

Anorexia nervosa

The basic pattern of anorexia nervosa seems to be the lack of desire and the lack of self-acceptance and acceptance of body and sexuality. The girl often presents severe problems related to her personality; her mind is often not fully developed compared to other girls her age, her sexuality is often less active, unless she uses this as a kind of activity that uses calories i.e. instrumentally and not for the sexual pleasure; spiritually she is often not able to give and receive love, and she often also has a poorly developed self (see (40) for a systematic way to analyze the personality disturbances). So it might be a little simplistic to point to the patients psychosexual development as the fundamental cause of the eating disorders, but according to psychosomatic theory the problems related to the lack of development of her personality is actually also likely to be caused by her

more fundamental problems related to her psychosexual development.

So we do not find it hard to see how anorexia nervosa relates to repressed sexuality; the patient's sexuality is often repressed in several ways: obviously there is often the regression toward the infantile autoerotism; then there is the translocation of sexuality from her genitals to her digestive system (and often also bladder-urethra); and finally there is often a strong component of masochism leading to self-destruction. If the reason for starvation really is masochism, and it often looks so, there is a hidden sexual pleasure in the self-destruction that is stronger than any pain you can inflict on the patient during the most rigorous scheme of behavioral therapy. Actually any scheme that represses the masochistic sexual energy is likely to deprive the female masochistic patient even the last remaining joy and meaning of life. This is likely to be the reason why behaviors coercive therapy, which is still in use in psychiatry, most often is strongly contra-productive.

Bulimia nervosa

Bulimia is in many practical ways the opposite of anorexia, but it still contains from a psychodynamic view many of the same basic elements of repressed sexuality. The shift from the genitals to the digestive organs (and often also bladder-urethra) is the same; the repression of vital sexuality and orgasmic potency into the masturbatory, clitoral state is the same, although the bulimic patient often is less repressed than the anorectic; and the masochistic quality of the bulimic behavior is often rather obvious. But in bulimia the fundamental drive is preserved. The patient wants to eat; when the patient tells about the strength of the urge it carries the same feel as the other basic biological urges, making it highly likely to be an expression of a hidden sexual urge. If this is the case, it is clear that it is uncontrollable by the girl or young woman. The power of sexuality is stronger than the power of the mind; it cannot be controlled by direct repression; it can only be handled by intelligent negotiation.

So if this is the case, the bulimic patient must learn to acknowledge her compensatory drive for eating as an expression of her sexuality; and her

neurotic sexuality must be developed to enable it to shift back and inhabit once again her pelvis, genitals - and become a natural sexuality.

Binge eating disorder

This disorder is a less serious disorder that seldom leads to medical attention, as we find it in girls and young women with almost normal psychopathology. In many ways this disorder is the clearest expression of sexuality taken to the digestive system. Instead of filling her vagina she is filling her stomach; and instead of releasing the tension in an orgasm, she releases it through vomiting. Many of these patients seem to have their sexuality repressed to the clitoral level being able to masturbate, but not to have full orgasm during coitus (loss of orgasmic potency).

The masochistic component is often lacking, but it can be there also. The simplest way to understand this is the patient masturbating through her digestive system, the same way other women masturbate by filling the vagina and emptying it again; we have noticed the habit of some of these patients to fill their anus and rectum with objects or large amount of water, and releasing this again for sexual pleasure or for reasons of "purification". This is obviously the same sexual dynamics taking directly to the intestines. The same way the urine can be held back and finally released as a masturbatory practice of some of these often sexually innovative patients.

The bulimic and the bingeing patients are often sexually active also; not all their sexual energy is channeled to the digestive organs, making the situation a little more complex. It is like a diverted river, where more or less water is running in a parallel river.

The cure is to help the patient lead all the water, all the flow of sexuality, back into the main river. First when the patient own all her sexual energy and is able to use it maturely genitally for satisfying sex with a partner, will her eating disorder – the symptoms of her disturbed sexuality – finally be cured.

Sexological treatment of eating disorders

In treating the eating disorders as sexological disturbances it is important to go directly to the patient's sexuality; this means that the therapist and the patient should agree completely that her sexuality and personality as a whole is much more important than her eating disorder. Of course, if the patient is dying from starvation or excessive overweight there might be practical problems in using such a strategy; it is important to remember that all problems start as small problems and only if they remain unsolved for a very long time turn into huge, even mortal situations. So this approach is wisely used as soon as the symptoms of the eating disorder appears, not when the girl or young woman has lost so much weight that she is unable to concentrate on anything and close to dying.

The aim of the holistic sexological therapy is the development of the patient's whole personality through rehabilitation of her sexuality – her genital character – with an often-used expression by Reich (28,29).

Holistic Medicine is nothing but the classical, European medicine going back to Hippocrates; this is the beginning of modern medicine, which we know rather well from uniquely well-preserved sources called the Corpus Hippocraticum (41). We have in recent years tried to develop holistic medicine into a modern, scientifically based system of clinical medicine, where patients are cured mostly without drugs and surgery. The theory and practice of clinical holistic medicine has been described in a number of books (42-45) and experimental cures for many illnesses and disorders including cancer and schizophrenia have already been presented in a series of papers (46-75). The sense of coherence seems to be a core concept in the understanding of holistic healing (76-81).

We are not in this paper going to repeat all the practical tools and details, but the interested physician is encouraged to start just by talking with the patient about her personal history and present problems and after obtaining the trust of the patient continuing this therapeutic work by using therapeutic touch, i.e. massage of the whole body. The combination of the conversational therapy and the bodywork has been

used for millennia to rid the patients of repressed emotions hidden in the body or related to the body and sexuality in the patient's mind. The basic idea in the therapy is to work against the patient's emotional resistance, to bring all difficult emotions up to the surface of consciousness, but first a variety of emotions will show in the therapy, often sorrow, anxiety, anger, helplessness, hopelessness or despair. After the emotional layer an even more intense layer of emotions connected to the sexual aspects of the body and its energies, including the genitals and pelvic area will appear.

The holistic sexological bodywork is normally *not* including the patient's genitals, as many patients can be helped without this degree of intimacy. If the patient is not sufficiently helped there are a number of small and large sexological tools to be used, like *acceptance through touch* (11) and *vaginal physiotherapy* (14,15), which are relative small tools and much smaller procedures than the standard pelvic examination, and larger tools like the expanded *holistic pelvic examination* (13), going all the way up to direct sexual stimulation of the patient in a radical and provocative technique developed 50 years ago by sexologist like Hoch and Reich called the *sexological examination* (82-92).

The fundamental strategy of therapy is to take the patient back in time, to allow her to confront the emotional and sexual problems of her early life, childhood, and even fetal life if necessary, that she could not solve at that time. The patient will get well again the reverse order of her getting ill – this is the law of Hering (93). The patients will heal her whole existence, not only a part – that is the salutogenic principle (94-95). The patient will come back into the old traumas, when she is exposed, in a symbolic form, for the traumatic events and energies that once created her wounds – that is the famous principle of similarity going all the way back to the ideas of Hippocrates; and finally she will heal when she got the resources needed at the time of the trauma, and is so confident with the therapist that she is able to receive them.

The eating disorders can easily be understood as sexual energies living their own life in the parallel body organs related to digestions, and we present our experience from the Research Clinic for Holistic Medicine that the eating disorders easily can be treated, if therapist and patient can agree that

sexuality, not the eating disorder, is the focus of the therapy. In our project we have observed that virtually all young female patients to some degree have an eating disorder; we understand these as symptoms of psychosexual developmental disturbances and we therefore successfully included the patients with eating disorders into the protocol for sexual disturbances [9]. We found that about half the patients was cured, not only for their sexual problems, but also systematically from their eating disorders, in one year and with 20 sessions of clinical holistic therapy. In general we found that independently of the type of problem about half the patients were cured, and the more direct the patient's sexuality was approached in the therapy, the more efficient it was (9,15,96).

Ethical issues

Holistic therapy and holistic sexology should be made according to the ethical standard of the International Society for Holistic Health (97) and the laws of the country you reside in. It will be difficult for physicians not familiar with contemporary holistic medicine or the works of Freud, Jung, Reich, Lowen, Rosen and others (26-29,98,99), to understand the full clinical rationality in interpreting the eating disorders as psychosexual disturbances. It will also be difficult for psychiatrists that normally do not touch their patients at all, to understand the therapeutic value of therapeutic touch. And when it comes to using the manual sexological tools, many physicians who are not sexologists, might find these tools too intimate and too directly sexual. In our clinic we have until now used the small manual sexological tools, and only rarely the holistic pelvic exam. Direct sexual stimulation of the female patients seems to be necessary in primary anorgasmia and similar sexual disorders, but we have not, in spite of the indication, found it correct to use these tools in our clinic, but have referred the patients in need of such therapy to the sexologists using these methods.

When it comes to teenagers below 18 years old, we have chosen to wait with the manual sexological treatment until they could sign up for these treatments themselves as adults legally responsible for their own treatment. For patients below 18 years we have often used the normal pelvic examination as basis for a

conversation about sexuality and related issues, and we have found the pelvic examination to be as therapeutic as it is unpleasant and even experienced as "very painful" by 15% of the teenagers (100). We know from several studies that patients with a history of sexual abuse very often react very negative emotionally to the pelvic examination (101); the penetration of the vagina with the speculum and other instruments, or just even the fingers, often gives strong associations to - and memories of the sexual abuse, and according to the principle of similarity this can - and should - be used therapeutically to help the female patient to heal her old wound on body and soul from the sexual abuse (18-20).

Discussion

The observation of the psychoform and somatoform dissociation of the patient will naturally lead to an intent to heal the patient by reconnecting mentally and bodily to the patient. As we are sexual beings, and as a disturbed sexuality has so many symptoms and is followed by so many complications of all kinds, we cannot afford to be a-sexual and to keep all discussion of the patient problems in the a-sexual realm, if we truly want to help the patient.

For almost 100 years psychotherapy and psychiatry have disagreed about the importance of sexuality in mental diseases; this disagreement continues when it comes to the eating disorders. We cannot here settle this old discussion today; just inform the interested reader about the theories and the tools for healing also the patient with an eating disorder. When you have worked for some years in the holistic clinic, as we have now with more than 500 patients, and seen how the dynamics of masochism, sexual repression into autoerotism, and sexual shifts from the genitals to the other organs of the body like the digestive organs (from mouth to anus) and the whole urinary tract (kidney-bladder-urethra) can be easily reversed and often followed by the radical improvement not only of the patient's sexuality, but also of quality of life, physical and mental health, and level of social, sexual and working ability, you will also come to believe in the old psychodynamic theories of Freud and his students. We found it often helpful to teach the patients about quality of life

theory (102-105) and quality of life philosophy (106-113).

The sexological approach in the treatment of physical, mental, and existential problems are not new; the traditional holistic medicine of old Greece did exactly that. We have become quite alienated to simple conversational therapy and bodywork during the last five decades, where biomedicine and drugs have become the answer to every problem of the patient, but with biomedicine we have not be able to help all patients and today every second citizen in modern society is a chronic patient, even in countries like Denmark where biomedicine and health service are absolutely free. So we have to conclude that biomedicine is not going to help all patients and biomedicine is not likely to help teenagers and young women with eating disorders – especially not if the psychodynamic hypothesis presented in this chapter is likely to be true. The most fundamental problem with the sexual approach is that is has proven very difficult to understand the true nature of sexual energy in scientific terms, and that the whole field of human development is theoretically extremely farfetched (114-126). To simplify everything it is important to recall that the essence of relating is being able to say I-Thou. In therapy the courage to love your patient is what in the end will heal you patient and release the patient from disease/pathology (127).

Conclusions

Virtually all teenage girls and young woman have an eating disorder to some degree. We have suggested simple sexual explanations for the most common eating disorders like anorexia nervosa, bulimia nervosa and binge eating disorder. We have suggested that these disorders could easily be understood as symptoms of psychosexual developmental disturbances. We have analyzed the symptoms in relation to three major ways that patients use to repress their sexuality as children: 1) The dispersion of sexual energy from the genitally mature to the immature masturbatory (clitoral) state, and further into the state of infantile autoerotism, 2) the dislocation from the genitals to the other organs especially the digestive organs and the bladder-urethra, giving a situation where sexual energy is

accumulated and released though substituting organs and 3) the repression of free, natural and joyful sexuality into first sadism, and then further into masochism.

The eating disorders can easily be understood as sexual energies living their own life in the parallel body organs related to digestions and we present our experience from the Research Clinic for Holistic Medicine that the eating disorders can be treated, if therapist and patient can agree that sexuality, not the eating disorder, is the focus of the therapy. In our project we have included patients with eating disorders into the protocol for sexual disturbances, and we have found about half the patients to be cured in one year and with 20 sessions of clinical holistic therapy, independent of the problem the patient initially presented with (9,128-132).

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Five tools for manual sexological examination: Efficient treatment of genital and pelvic pains and sexual dysfunctions without side effects

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Abstract

Manual sexology is clinical, holistic medicine focused on sexual healing. Sexual healing occurs when the patient understands and assumes responsibility for the disturbances in her psychosexual development. The tools can be categorized as small and large tools of manual sexology, with comparison to the pelvic examination. This paper reviews five tools for examination and the simultaneous treatment of the patient (i.e. clinical medicine): 1) "Acceptance through touch" is therapeutic touch in sexology, where the therapist gives the acceptance to the patient on a sexual and bodily level that she needs but did not get from her parents, 2) Vaginal acupressure (Hippocratic pelvic massage) is massage of the organs of the pelvis through the vagina, which helps the patient to get present in the lower parts of her body and integrate repressed negative feelings and emotions often related to sexual traumas. Hippocrates and his students used this method 2,300 years ago for the treatment of hysteria, 3) The pelvic examination is itself highly therapeutic but only if the physician or gynecologist addresses the emotions it provokes, 4) The holistic pelvic examination is the pelvic examination done in an empathic and therapeutic way, 5) The sexological examination, often called the "educational, gynecological, sexological examination" is a yet more complicated and time consuming and also more therapeutic procedure that involves the exploration of the patients sexual energies, character, sexual problems, sexual history and also use the large therapeutic tool of direct sexual stimulation of the patients clitoris and vagina. This tool can often bring a chronic, an-orgasmic patient all the way back to orgasmic potency in short-term therapy. It has been used for sexological research, but has so strong curative qualities that it potentially could help many patients, who are not sufficiently helped with the smaller sexological tools. The ethical and legal aspects of the manual sexological tools are discussed.

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Introduction

The pains and discomforts and problems related to the organs of the female pelvis like the female sexual pain disorders, vulvar vestibulitis syndrome, dyspareunia and vaginismus have been variously classified through time as sexual disorders, pain disorders, psychosomatic disorders or urogenital disorders (1). The ambition to create a precise diagnostic system for these pains, discomforts and dysfunctions have largely failed (see 2,3) and the complexity of the matter remains basically a mystery for both the clinician and the researcher. The fundamental lack of scientific understanding of the female problems has led to a severe lack of sufficient treatment. About one third of the women in the western world have in spite of seeing their doctor on a regular basis, recurrent complaints or chronic conditions related to the organs of the pelvis, especially the genitals, bladder and muscular system, which are obviously not cured or even helped much by the standard biomedical examination and treatment (4).

The problems of the female patient have been important issues from the beginning of medicine; the famous physician Hippocrates and his students used pelvic massage and similar treatments for a vast number of such female illnesses and health conditions, which were already at that time related to problems with the sexual energies of the womb and the general psychosexual development of the mature female character and sexuality (5). Since the development of modern sexological science around 1950, such manual sexological procedures as pelvic massage have again been acknowledged by physicians as efficient medical tools for a number of sexual problems, pelvic and genital pains, and other dysfunctional conditions in the pelvic area (6-13).

Since Freud and Jung repressed libido and sexuality has been seen as a primary cause of many mental and physical problems (14,15); quite surprisingly these researchers seemed to be in accordance with the Hippocratic tradition in their understanding of sexuality and its fundamental importance for human health. In contrast to this holistic medical tradition, we have the biomedical science that does not see sexuality, but biochemistry and genes as a leading cause to the patient's mental and somatic health problems; this understanding has

lead to a large number of pharmaceuticals, which most unfortunately does not seem able to help most of the female patients with problems related to sexually and the energies in the pelvic area. While Freud's psychoanalysis uses only talking (14), manual sexology much inspired by Reich (6) often used bodywork, often focused on the genitalia, to free the repressed sexuality and painful emotions that have caused the problems.

Many pains and discomforts of the pelvic organs are not well understood today. It is a fair guess that repressed emotions related to sex (including the oral and anal aspects described by Freud) also causes many of the most common problems like the urinary tract infections (UTIs) and the genital tract pseudo-infections, that mimics the UTIs, but has no bacteria (or insufficient bacteria to explain the symptoms). 50% of women have these symptoms at some occasion and it has been estimated that half of the GTI are actually sterile inflammations caused by something else than bacteria (16). Most likely the inflammation is simply caused as a somatisation of the sexual blockages caused by difficult repressed sexually related emotions.

The general practitioner or gynecologist will therefore be well advised to always look for a psychosomatic, sexual cause for recurrent or chronic pelvic or uro-genital pain or discomfort. The most efficient way to look for this is by using the combined exploration and treatment known as the classical "sexological examination" (6-13). Most unfortunately this examination is highly complicated and takes 30-90 minutes even for a trained physician.

To make sexology more ethical, rational and also more customized to the needs of each individual patient, and to make it possible in the future to treat the many female patients with such conditions also in a general practice with more limited time for such procedures than the sexological clinic, we have during the last 10 years developed smaller and faster tools than the thorough, traditional sexological examination.

During this period of research at the Research Clinic for Holistic Medicine in Copenhagen we have found, that about 40% of the female patients with problems in the pelvic area can be cured just with the smallest of these tools, acceptance through touch (17), and about 60% can be cured with vaginal acupressure

(also called Hippocratic Pelvic Massage), where the patients resistance is addressed and analyzed (18,19). Most interestingly we found that the pelvic examination has a large therapeutic potential in itself, if it is used wisely, and its healing potential is exploited (20), but the strong traditions of this procedure make this somewhat difficult. A therapeutic element can after the patient's consent be added to this procedure, which we have found to be a great help for patients, who needs a more empathic style of pelvic examination, i.e. because of sexual traumas. Finally, the large full-scaled sexological examination can be used to help the patients that cannot be helped by these smaller tools; this procedure includes the provocative tool of direct sexual stimulation of the female patient (6-13); the use of this dramatic tool is justified by a curative rate of about 90% of the patients with chronic conditions like anorgasmia (21).

The ethical principle of using the smallest tool that helps the patient must always be remembered. It is also important to discriminate the different tools accurately to get the consent from the patient to exactly the planned procedure. A smaller procedure makes it easier for the patient to participate, making sexological therapy possible even for the patients that have been severely traumatized sexually, i.e. by rape or incest.

It should be mentioned that a substantial fraction of the patients – we estimate one in three - who realize that their problem is related to a disturbed, psychosexual development, can be helped without any manual sexological treatment, but just with a combination conversational of therapy and customized exercises (22-24).

This is easier if the patient already has a sexual partner to do exercises with, the lack of which is often an important part of the problem. The use of non-sexological bodywork in clinical holistic medicine will often speed the treatment up also of sexological problems, and reduce the number of sessions it takes to help the patient, and it might also increase the fraction of patients being cured to about 40% (25). Research has shown that psychotherapy in general is less efficient to cure sexual dysfunction than sexological therapy (26).

Five tools for manual sexology

The five tools for manual sexology are listed in table 1. Before a manual sexological tool is used it is wise to get written consent, and also not to be alone with the patient during therapy. It is important to measure the state of sexual dysfunction or pain with a simple questionnaire like the QOL10 (27) or a visual analog scale, to document the effect of the treatment, and also to know when to step up and use a larger tool because the one in actual use is not working.

Table 1. The five tools for manual sexology. These tools should only be used when conversational therapy, anatomical education, sexual biography etc. have failed to solve the problem, and then the smallest tool that can cure the patient should be used (28)

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1. Acceptance through touch
 2. Vaginal acupressure
 3. Pelvic Examination
 4. Holistic Pelvic Examination
 5. Sexological examination
-

1. Acceptance through touch

This procedure of accepting therapeutic touch (6-13,17,30,31) is the most basic tool of sexology, as it just gives acceptance to the patient's body. In principle the accepting touch can be applied everywhere; just holding the patients hands with great acceptance is highly therapeutic. To make this tool more efficient it can, after consent made before the session starts to avoid that the patient feeling overwhelmed, or even exploited or abused, be used directly on vulva; it is wise to start by putting the patients own hand on her vulva and the sexologists hand on top of hers; it is also wise to start by doing it with the clothing on and having a nurse in the room also. If this does not help the patient, the patient is asked to undress, and the vulva can be treated in a quiet, calming manner. In this process the therapist take the role of a caring parent and give as much as possible his unconditional love and acceptance to the patient, her body and her sexuality.

Just the experience of finally getting the acceptance that she never got from her parents can

make small miracles happen; if the patient suffers from a sexual aversion disorder or low sexual self esteem, this procedure will often be experienced as a very strong intervention, in spite of its minimal size as a therapeutic tool, and the effect can be surprisingly large.

To understand the therapeutic value of *acceptance through touch* one should remember that the patient did not get the acceptance of her body, gender, genitals and sexuality she needed for not repressing her sexuality and sexual feelings; the traumatic repression happened in childhood every time she was overwhelmed by negative emotions that she could not contain. These sexual traumas are often not connected to physical abuse, but they can be. Almost all international studies made during the last decades have documented that about 15% of females have been sexually abused in their childhood (see 30). Therefore such traumas are not uncommon at all and must be expected with one in two or three of the female sexological patients, as the traumatized patients are much more likely to have problems in the pelvic area. The reason for the strong therapeutic effect of such a simple tool as acceptance through touch is that it gives resources to the processing and integration of sexual traumas, also when these are not caused by abuse, but simply by sexual neglect, which often is equally traumatic as abuse (31). The surprisingly simple tool of “acceptance through touch” thus often opens up for a constructive and therapeutic dialog about the patient’s sexual history. A sexual trauma that comes from the dramatic events of incest or rape are often more deeply repressed, and take time and often also larger tools to cure like the sexological examination (see below).

2. *Vaginal acupressure*

This intervention is actually the classical Hippocratic vaginal massage; it is most simply done as the explorative phase of the normal pelvic examination with a focus on the feelings and negative emotions associated to the different places, anatomical structures, tissues and organs in the pelvis, including the muscles and the outer and inner genital structures. The penetration of vagina symbolizes the intercourse (14), and the patient’s subconscious will often react to

the digital penetration similar to the reaction to penile penetration. Therefore just penetrating the vagina with one or two fingers already put the female patient in a position, where all the difficult and painful emotions connected to sex can be exposed and processed.

A few dysfunctional patients react with sexual arousal on this procedure, but most react with resistance. About half of all sexual problems and genital pains can be cured just by addressing and processing the repressed emotions and feelings behind this resistance, as already discovered by Reich (6). Sometimes the procedure needs to be repeated, while layer after layer of repressed material are integrated (32-34). Again a nurse should be in the room also.

3. *The pelvic examination*

It is well-known that female patients with sexual traumas often react negatively to this procedure (35); many of these patients complain that they feel the pelvic exam as humiliating and traumatic in itself. If that is the case, a smaller tool must be used, until the resistance towards the pelvic examination is reduced to a manageable level. The negative emotional reaction is coming from the strong similarity between the pelvic examination and many sexually charged and traumatizing elements, like being controlled, being looked at, being penetrated in a vulnerable position, being penetrated with a large, hard, physical object (the vaginal specula), being tortured (pain from the procedure, both from penetration and different sorts of tests taken). The deep exploration of the uterus including the visual inspection of the portio vaginalis cervicis uteri is often extremely provocative, as “nothing is left uncovered”.

This is in essence a complete exposure of the patients, and it demands a high level of trust and a complete emotional and behavioral surrender of the patient to the physician or gynecologist making the examination. Using the therapeutic value of the pelvic examination is not difficult at all; all it takes is an honest talk with the patient about what the different aspects of the examination procedure symbolizes, and what this does to her emotionally. The problem here is that the patient often has been to gynecologists with some in denial about the provocative and potentially traumatic dimension of this procedure; she will be

very surprised to finally meet a therapist that acknowledge the emotional aspects of it and cares to explore the emotional roots of her reactions to the procedure. As the emotional response to the standard pelvic examination often is a rather large and actually somewhat hard to integrate emotionally for most patients with sexual problems, it is wise to start with a smaller tool, if the intent is exploring and curing issues related to sexuality. Again a nurse should also be in the room during examination.

4. Holistic Pelvic Examination

Instead of using a smaller tool like acceptance through touch or vaginal acupressure, the pelvic examination can be done in a slow and emphatic way, where the patient gets the time she needs to accustom to every step of it. If this is done with patients with sexual traumas it can be extraordinary therapeutic, but the session can take one or even several hours, and this is often not possible in a busy clinic with limited professional resources. We have found that this procedure can change the patient's biology at a very profound, even hormonal, level, so it sometimes even cures involuntary infertility of psychosomatic origin (20). Basically what makes this intervention "holistic" is the "love and care" for the patient that allows her to take part in everything that is happening in the consultation hour.

The pelvic examination can according to our experiences when used in this therapeutic way help patients with sexual desire problems, sexual arousal problems, lubrication problems, lack of sexual pleasure, negative feelings about sexual interaction, genital arousal disorder, lower genital arousal associated with intercourse, pain due to psychosocial factors, deficient pelvic muscle control etc. A nurse should be present during the examination.

5. Sexological examination

There are various kinds of sexological examinations, but the following is often used and it was created in 1965 by Hartman, Fithian and Morgan (8,10,12) and inspired by Reich, Hoch and Kegel (6,7,11,12). The sexological examination was designed to evaluate and

assess the various components of human sexuality (e.g., perception, feeling, arousal, and response patterns) present or absent in varying degrees in research and therapy populations. The examination was a supplementary to the examination given by a gynecologist or other medical specialist. The objectives of the examination include (8,10,12,13):

1. Providing a learning experience in physiological psychology for a husband and wife, committed partners, or singles.
2. Dealing with the self-concept of women who want to know, "Am I normal?" "Is my clitoris/labia too big or too small?"
3. Teaching women specific vaginal exercises.
4. Giving the therapist a clear picture of the response patterns of the subject through verbal reports of sensations to stimulation in each area of the vagina.
5. Identifying, where present, causes of dyspareunia and pain in the female. Some pain or discomfort may be psychological.
6. Giving genitalia their correct anatomical names.
7. Making the individual more at ease with her sexuality and sexual functioning.
8. Enhancing communications between couples about genitalia and functioning.
9. Overcoming the reluctance by some individuals to have non-intercourse genital contact, such as touching the penis or putting a finger in the vagina.
10. Helping the patient to intimately explore own (and partners) genitals.
11. Teaching the use of other techniques to be used later during treatment, in privacy, where they may be carried on to fruition. This, for example, might include the squeeze technique.
12. Explaining other sexual options where, in private, the partner may stimulate the spouse to climax without the use of the penis.
13. Observing psychological conditions and responses to be treated during the therapy.
14. Acquainting the female with her own body to dispel some of the feeling that the genital area is a special place forbidden for all but physicians to see.

15. Checking the clitoris to see that it is free of adhesions. Women typically say their physician has never examined it.
16. Searching for areas where nerve endings come together in a systematic way, suggesting that this may develop positive feelings.
17. Assisting women in determining areas of perception, feeling, and awareness in their vagina. Pointing out areas in the vagina that tend to be more sensitive and responsive for many women (i.e., 12 o'clock, 4 o'clock, and 8 o'clock positions).
18. Determining a woman's response and arousal patterns. Indicating to her whether or not she lubricates well and vasocongests when she does.
19. Locating areas digitally that may be producing pain, discomfort, or problems with sexual arousal or intercourse—such as separation of muscle in the vaginal wall; long labia minora; scarring, which may be tender or fibrous—and to pinpoint the source of "pain" when present.
20. Identifying, where present, reasons for vaginismus, which are not only physiological but psychological.
21. Teaching a male partner how to caress the female's vagina.

The most radical aspect of the sexological examination and what makes it different from the other manual sexological procedures is that it involved the technique of direct sexual stimulation. "Direct sexual stimulation of a client toward a high level of arousal is not, and never has been, a part of the sexological examination conducted at our Center. Still, some women do become aroused, and occasionally a sex flush will be observed in the process practice of the vaginal caresses according to Hartman and Fithian (13).

The sexological examination is also examining the clitoris: "More important than the stimulation of the clitoris in the female sexological examination is the determination of whether or not clitoral adhesions are present. This is a condition where the prepuce is stuck or adhered to the glans clitoris. For pre-orgasmic women, the inability of the clitoris to

withdraw as part of sexual arousal may prevent particular women from full response. Even though some women are orgasmic with clitoral adhesions, freeing them usually results in easier, quicker orgasms and less discomfort due to calcified, trapped smegma" (13).

The sexological examination is explicitly sexual, and it addresses all relevant issues of sexual nature, and the female patients sexual responses are tested in the clinic directly by letting the patient feel sexual desire, arousal and pleasure, and report on it. The sexological examination can be taken all the way to instant sexual healing of the female an-orgasmic patient who cannot by herself get an orgasm. This technique has been used for 30 years by sexologists like Betty Dodson in the USA and Denmark and is still considered highly controversial in spite of its extreme efficiency, allowing therapists like Dodson to cure about 90% of the female patients with chronic anorgasmia, in only 15 hours of intensive therapy (21).

Ethical and legal considerations

The major concern that professionals have about the sexological examination is that untrained or unethical therapists might use it unwisely (6-13). Manual sexology must therefore be performed according to the highest ethical standards. The holistic sexological procedures are derived from holistic existential therapy, which involves reparenting, massage and bodywork, conversational therapy, philosophical training, healing of existence during spontaneous regression to painful life events (gestalts), and close intimacy without any sexual involvement.

The general ethical rule is that everything that does not harm and in the end will help the patient is allowed ("first do no harm") (27), but we understand that the more radical, manual sexual procedures are not accepted in many countries due to the sexual taboo. But no culture has the power to forbid the physician to touch his patient, and every time there is a touch, acceptance can be given. So every physician and therapist in every culture of the planet can use the smallest of the manual sexological tools. The physician or therapist is well advised to adjust his practice to the laws of the country.

To perform the sexological techniques, the sexologist must be able to control not only his/her behavior, but also his sexual excitement to avoid any danger of the therapeutic session turning into sexual activity. The necessary level of mastery of this art can only be obtained through training, supervision, and the presence of a third person. We recommend the ethical rules of the International Society for Holistic Health to all practitioners of sexology, bodywork, and clinical medicine (27).

We will ask the reader of this paper who is left with the feeling that manual sexology is unethical and potentially abusive, because it allows the physician or therapist to touch the patients genitals, which potentially could be done for the therapists own pleasure and not for the benefit of the patient, to take into the consideration that the patients that seek sexological assistance are doing this consciously, with full consent, and often because they are chronically ill and severely tormented by their sexological health issue. Many of these patients are not able to find a sexual partner and their situation in life seems often pretty hopeless; many of them have been dysfunctional and incurable for many years (we found a mean of 8.9 years in our study of vaginal acupressure (19)), often with chronic pains, and they are depressingly aware that they are suffering from a condition for which there is no efficient biomedical cure, because they often have tried every possible treatment, sometimes even including genital surgery for the pains!

Many of the patients are also unaware of body memory or repressed memory due to earlier traumatic stress (30) and some patients only open their mind up for their earlier sexual abuse through the sexological examination, because the touch becomes the trigger that reconnect body and soul and recovers the patients *sense of coherence* (36,37). Therefore manual sexology has a unique healing potential in a time where sexual abuse and repressed sexual traumas are frequent.

We are aware that manual sexology is still not legal in some countries and find it important for the many sexually traumatized patients, and also for the many patients who got their psychosexual developmental problems for other reasons, who potentially could be cured by the aforementioned five sexological tools, that every country in the future will

allow its physicians and therapists to practice these five tools of manual sexology.

Discussion

The primary purpose of sexological therapy is to improve the global quality of life and secondary to improve health and ability, which often happens when sexuality is improved (5,6,14,15). The severe conditions of the patients and the chronicity, and the high efficiency of the sexological procedures, are what ethically justify the much more direct, intimate, and intense methods of manual sexology. The sexological intervention is ideally a holistic procedure also addressing the patients mind and spirit, not only the body; it integrates many different therapeutic elements also from psychoanalysis and short-term psychodynamic psychotherapy (22-24); it works on many levels of the patient's existence and personality at the same time, including spiritual aspects like the character and the meaning and purpose of life (the life mission) (38). We find it therefore correct to call these abovementioned procedures for "holistic sexology" or "holistic existential therapy", and include them in the concept of clinical holistic medicine.

Sexual problems are not only very distressing for the patient; they are also an integrative part of a psychological developmental disturbance that affects the personality of the patient at its roots. Reich wrote about the "genitally mature character", or the "genital character" for short (6), and we have often seen that healing a patient's sexual problems lead to the subsequent healing of the patients mental and existential problems also, indicating that a major reason that many mentally and existentially troubles patients never recover might be the constant repression of their sexuality and libido, as already suggested by Freud and Jung (14,15).

Sexuality is still one of the strongest taboos we have in our western culture, and only if all physicians and health professionals work in concerted action will we be able to do something about this within a few generations. It might be the missing link to a more healthy population at large.

Psychotherapy must be considered as an alternative to sexological therapy, but there seems to

be a general acceptance of the fact that many sexual dysfunctional states are not cured by psychotherapy alone (24), and that sexological procedures are necessary for patients that are non-responders to psychotherapy. Clinical holistic medicine that includes philosophy of life and bodywork are often efficient with sexual problems and seems to be able to cure 40% of these patients only by use of therapeutic touch including acceptance through touch (25).

In psychology, psychiatry, and existential psychotherapy (39,40), touch is often not allowed, and this might be the reason for these treatment methods not being very efficient with sexual dysfunctions.

Conclusions

The toolbox of manual sexology is so varied that there are tools for any occasion and any patient with sexual problems or uro-genital pains and discomfort. If there is not an obvious reason for a problem in the pelvic area, the general practitioner or therapist is well advised in thinking of sexual problems and repressed feelings and emotions relating to sexuality, as these has a strong tendency to become psychosomatic.

There are a lot of different disorders and sufferings that often can be helped or cured by manual sexological procedures: Sterile urinary tract infections, chronic pelvic and abdominal pain, pain and discomfort in the vulva, introitus or vagina, dyspareuni, vulvodinia, anorgasmia, sexual aversion syndrome, infertility patients, sexual desire problems, sexual arousal problems, lubrication problems, lack of sexual pleasure, negative feelings about sexual interaction, genital arousal disorder, lower genital arousal associated with intercourse, pain due to psychosocial factors, deficient pelvic muscle control etc.

Some of the five tools of manual sexology might be too advanced for most general practitioners and therapists and luckily most problems can be solved with the small tools. Just working with awareness and giving acceptance every time a patient is touched is already a huge step forward towards sexual health of our patients. Physicians and therapists who have general concerns about pelvic floor physiotherapy should know that over 50 randomized clinical trials

has shown vaginal physiotherapy to be rational and efficient for incontinence, pelvic and genital pain syndromes, etc. without any significant side effects (41), but when it comes to sexual dysfunctions the physiotherapists recommend the sexological examination to improve efficacy.

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Medical ethics: Therapeutic dilemmas in the sexology clinic

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Abstract

Medical ethics provides us with rules and principles about how we as physicians can benefit our patients without doing harm; this goal is the essence of ethical medicine. Contemporary “sexual-ethical rules” were set up to protect patients from being sexually abused by their physicians, but surveys document that the existent “ethical rules” do not prevent sexual abuse of patients by their therapists. On the other hand they make holistic physicians and CAM-therapists using bodywork especially vulnerable to accusations of unethical behavior. The fear of being harmed by open critique in the media makes many physicians abstain from using CAM-bodywork, therapeutic touch, and sexological manual therapy, thus depriving many chronic pain patients the healing care they desperately need. The standard ethical rules in medicine and therapy are thus not working well and should be revised. A deeper understanding of sexual traumas and sexual healing enables us to evaluate the general validity of ethical rules, and the specific ethics of sexological therapies and CAM-bodywork. We discuss the ethics of manual sexological techniques, like “vaginal acupuncture” with therapeutic asexual, genital touch for dyspareunia and vulvodynia and Betty Dodson’s sexological method and “the sexological examination”, where direct sexual, clitoral stimulation are used to break the orgasm-barrier in anorgasmia. The problems of consent are discussed. Sexual desires acted out without ethical consciousness are potentially harmful, and the Hippocratic ethical rule of “not abusing the patient’s body” must be well respected at all times. We conclude that therapeutic touch is ethical and should be allowed, but understand that different countries and cultures have different rules and laws.

Keywords: Integrative medicine, holistic health, sexology, ethics.

Introduction

The physicians around Hippocrates 300 BC used in their famous “character medicine” (1) intimate conversations, bodywork and spiritual exercises. The Hippocratic physicians were extremely aware of

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medical ethics and the Hippocratic Oath contained a promise of “not abusing the patient’s body” and regulated thus the physician’s behaviour (1). Character medicine induces salutogenesis through rehabilitation of the patient’s character (2). When patients step into character they improve self-esteem and self-confidence, uses their talents better, and create more value in their relationships, and thus increase their sense of coherence (SOC) (3-10 0, which according to a large body of scientific evidence induce healing of both physical and mental diseases (11-15). As we have two genders, a natural part of this process was the rehabilitation of the patient’s sexual character (1). According to Corpus Hippocraticum bodywork like healing massage with and without oil was a central part of the holistic medical treatment, and the Hippocratic medicine included intimate pelvic massage through the bodily openings, which was believed to balance the female psyche and cure diseases like “Hysteria” (1,16,17). Similar techniques have been used for millenniums in India as a part of the tantric tradition, and presumably many premodern cultures.

Hippocratic character medicine was built on a theory of four basic elements, which according to Greek anatomical science were represented in the body by four bodily fluids. In spite of significant progress in anatomical understanding, it is still generally believed in holistic medical science that bodywork is essential for the healing of both somatoform and psychoform dissociation (18,19). In so many ways contemporary holistic medical science has been validating the methods of ancient Greek medicine and for more than two millennia became the holistic medicine of whole Europe - and a significant part of the near orient.

The development of natural science during the last century has given us the pharmaceuticals used by contemporary biomedicine, which has now become the dominant medicine in Europe. In Asia and Africa CAM is still dominant, and in the USA CAM is now again becoming the preferred medicine with more CAM-consultations than biomedical consultations after 50 years of biomedical dominance.

Biomedicine has made it possible to treat patients without the need for bodywork and healing touch (20), thus avoiding the problematic nudity, and physical intimacy of the classical holistic medicine.

Except for a few clinical standard procedures like the physical examination including pelvic examination, and some tools of manual medicine i.e. manipulation of the spine in lower back pain, the biomedical physician rarely do touch and undress his patient.

The International Society for Holistic Health, a society for the physician, therapist and researcher in the field of scientific holistic medicine, has in its ethical code for holistic medical practitioners two rules regarding the therapists ethical conduct: “The practitioner must not: Exploit the patient economically, philosophically, religiously, sexually or in any other way. The consent of the patient does not free from this.” And “The practitioner must not: Engage in a sexual relationship with the patient.” These rules are copied from the ethical rules of biomedical doctors; they secure that holistic physician and therapists are behaving as well as the biomedical physicians, but they might not be optimal for their purpose.

In the shift to biomedicine the complex ethics of holistic medicine expressed in the original Hippocratic rule “do not abuse the patient’s body” has been changed to the much simpler rule of contemporary biomedicine: “do not act out sexually”. For most physicians these rules are saying the same, but a sexual relationship is not always abuse. Sometimes it can be helpful, as in the famous example from Masters and Johnson’s clinic, where a female physician worked as substitute partner for male patients with erectile sexual dysfunction (21). Today both CAM and advanced holistic sexology are using methods that use sexual elements, making it necessary to reconsider the medical sexual ethics. Another reason to analyse medical sexual ethics is the sad fact that in spite of the simplicity of the ethical rule of not acting out sexually, sex between doctors and patients are extremely common, and the violation of the ethical rules are causing many problems both to patients, physicians and their societies. Violation of ethical rules are also one of the most common accusations in the media against doctors and a bare accusation can harm the doctor’s whole career, also when the physician is later completely cleared.

In studies with 1,891 responders, 9% of the physicians admitted to having had a sexual relationship with a patient (22) and many more were likely to have had it without admitting it, as such an

admission to break the “ethical rules” often have dire consequences for the physicians career. In one study 29% of the responding therapists reported that at least one of their patients had experienced sexual relations with the most recent, former therapist (23). Much more common than having sex with a patient is having sex with a former patient; only a 37% of the physicians opposed sexual contact with a former patient, while 94% opposed sexual contact with a current patients (22). In spite of most doctors finding it acceptable to have sex with former patients, and in spite of the fact that no valid arguments have been put up against this, it often has dire consequences because of strict “ethical rules”. One example of this is a well-respected gynaecologist in the United States, who eight years after treating a patient became her partner. He broke a very restrictive ethical rule of the local medical association of never having sex with an ex-patient, and he had to leave his job at the hospital (24). From a rational perspective this is an example of an ethical rule that harms not only the physician, but also the many future patients he could have helped, and in the end also the medical society now having to expel one of its fine members for unethical conduct. Many more examples like this exist.

Accusations of unethical conduct has been raised against one of us (SV) in the media some years ago by a group of psychiatrists that found the procedures of a pilot study in sexological, manual therapy (17) unethical. This media campaign had strong negative impact on our research in holistic medicine, even though we have had no patients complain about the treatment that helped every second patient without harming anybody (11-15,25), which was verified by the police investigation also. This group of psychiatrists have competed with us for using the Zachau-Christiansen birth cohort of 9,006 mothers and their children (26) giving them a strong negative bias. A later investigation by the authorities concluded that our holistic medical treatment had no ethical problems and that the accusations for abuse were false, but damage was done, and valuable funding lost. Public accusation for breaking the medical ethical rules, or just spreading such rumours are often-used and highly efficient weapons against colleagues in inter-collegial power-struggles, where holistic medical physicians, sexologist and other alternative therapists who use bodywork are

especially vulnerable to such accusations. The result is that many therapists avoid using bodywork in spite of this kind of therapy being the only way to heal somatoform dissociation (18,19). Ethical rules that create such a severe hindrance for the physicians, that they do not dare to use the tools needed to treat the patients, are not ethical in our final analysis.

These examples indicate an urgent need for deep exploration into the difficult field of medical ethics and if possible, a change of the rules of medical sexual ethics, in order to make them much more beneficial and much less harmful, both to patients and their physicians. We need to analyse when a physician-patient relationships is actually harmful and traumatising to the patient, and when it is not, to see if we can pinpoint the ethical principles and sharpen the “ethical rules”, so that we can protect the patients from sexual abuse, and in the same time make rules that do not harm the physicians or unnecessarily restrict his ability to use the therapeutic tools that help.

In this paper we first look at ethical problems in sexuality in general; then we look at ethical problems in sexological and holistic manual therapy and finally we look at the ethical problems in the physician-patient relationship.

Part 1: Ethical problems in sexuality

When is sex harmful?

We need our sexual practice not to cause sexual traumas and if possible we would like sexuality to be a source of pleasure and personal development. We would also be very happy if our sexual behaviour leads to sexual, psychological and existential healing of our partner and our self.

To avoid harming each other we need a thorough understanding of what sexual behaviour causes sexual traumas. A logic way to investigate this seems to be an analysis of the loss in quality of life of people getting sexual traumas. Unfortunately no thorough, prospective studies have been made on this, making it impossible to analyse the negative effect of sexual life events. Several retrospective studies have been made documenting a strong association between abusive

sexual life events and quality of life; Table 1 list such findings from our own study (27,28).

Global quality of life is in contemporary holistic medical science often seen as the most important endpoint in studies, and it seems quite clear and logic that events like incest and rape are associated with low quality of life. But it is very important to remember that a low quality of life also is associated with high vulnerability increasing both likelihood of getting involved with sexually traumatising events, and the likelihood of being traumatised by a sexual event. Sexually traumatising events will decrease quality of life, often taking the patient into an evil circle of inviting abuse by playing the victim and being victimised. Being raped is an indicator of being vulnerable. Incest is an indicator of a dysfunctional family. The negative effect of rape or incest is thus not so easily established, and the research on rape has demonstrated what has been called posttraumatic paradoxical growth (29-33): the raped girls are seemingly doing better than the girls not being raped. These data are very disturbing to our whole understanding of sexual traumas, and makes us aware of the complexity of the subject. What looks like a trauma can be a healing event (34).

In spite of these reflections, sexual assaults are known to be among the most traumatic of events and sexual torture is internationally acknowledged as the most evil and destructive methods of torture, and many sex-torture-victims are never rehabilitated in spite of intensive therapy. Rape is intentionally used in war to destroy and enslave the enemy, and rape of a virgin has in pre-modern cultures been regarded as a sin comparable to murdering the girl and the rapist given a similar punishment. Sexual abuse of a patient's body has since Hippocrates been considered one of the most fundamental violations of the physicians ethical rules; a serious crime followed by severe punishment by the Gods. The traumas of violent incest are known from clinical practice to be among the most traumatic of life event (35-37).

So incest and sex with children are extremely harmful, as is sexual violation by force. In accordance with this our study of the correlation of life events and global quality of life documented that rape, incest, and sexual assaults actually were among the life events associated with a very low quality of life of the victim (see table 1). We found such events similar to

events like "threatened with violence to the family" and statistically worse than the events of "brain-bleeding" and "two psychiatric hospitalizations".

But things are even more complicated. Some people are actively seeking to become victims of sexual violence, and sexual masochists are often paying prostitutes money for sexual slavery and forceful sexual abuse (35-38). People are often filled with strong and strange sexual desires leading to all kinds of difficulty and developmental crises from sexual abuse they first gave their consent to.

One theory is that these people are actually searching for healing from early sexual abuse by seeking similar events, as they only can heal by getting back into the traumatic events, and need present time abuse as support for going back (39). This theory is not in accordance with our clinical finding, since many such patients do not recall sexual abuse in childhood during therapy (although some do). From a philosophical perspective these traumas seems to be inherited from their parents in an "energetic" or symbolic way; they are often called "karmic traumas". So one theory of paradoxical posttraumatic growth is that patients, who need these events to heal actual or symbolic "karmic" traumas, subconsciously attract these events. Philosophies of this kind coming to the west from the orient; especially Hinduistic and Buddhist philosophy from India, China and Japan are becoming increasingly popular.

It is important to underline that the teachings of many of these philosophies are not easily rejected by scientific arguments. We often need to work with "karmic" traumas in the holistic clinic, as patients presents trauma, they impossibly could have had, like one patient "recalling" the pictures of being raped by 100 soldiers during a war, and presenting the emotional content of the trauma in therapy.

An alternative interpretation of this "karmic trauma" is that we are talking about "implanted memory" (40), but as there is no claim of this having happened in reality, this term does not seem appropriate. Some philosophers with this line of thinking believe that even sexual assaults in childhood are invited by a vulnerability caused by the karmic traumas, and that these events happens for a higher, spiritual reason.

Table 1. Major events in life (selected for illustration)

The connection between global QOL and 1,000 different life events; only statistically ($p < 0.05$; NS: Not significant) and clinically significant factors listed. Difference in global QOL is measured according to the Integrated QOL theory, and is measured with the validated SEQOL questionnaire. *) Difference in percentage between the worst and the best off (single events), or calculated with the method of weight modified linear regression (impact of all events)	
Life event (impact of single event)	QOL-difference (%) *)
Sexual assault by well-known offender	-20.8
Threatened with violence upon family	-18.6
Victim of rape	-15.7
Incest, without intercourse	-15.4
Sexual assault: Pawing	-13.9
Expulsed from a group	-12.9
Lack of care in childhood	-12.3
Attempt of rape, 1st time (women)	-12.1
Two psychiatric hospitalisations	-11.9
Registered in a credit-bureau	-11.9
Cannot run	-11.9
Other serious physical disorders	-11.5
Got kicked under attack	-11.2
Sex harassment	-10.8
Brain bleeding (apoplexy, stroke)	-10.3

How repulsive this thinking might seem, placing so much of the guilt on the victim, the perspective often helps severely abused patients to assume responsibility for the experience. The perspective of karma creates order in chaos for the time being, and allows the patient to integrate the traumas caused by the abuse, which is important for existential healing (salutogenesis) (3,4,41-43). In the course of therapy such “therapeutic philosophy” must be carefully de-learned (40).

To conclude this paragraph, sex is harmful when: 1) the victim is too vulnerable, or 2) too much force is used, 3) leading to a sexual experience which is overwhelmingly painful (or pleasurable) leading to repressed emotions, 4) and the event induces a destructive philosophy or self-image. If 1), 2) and 3) are happening, but this is leading to healing, this sexual event was not harmful, but beneficent. This can be the case in holistic sexological therapy, based on the principle of similarity, where the tool of “controlled abuse” is being used (44). This might be the most difficult problem to solve in this paper: That the fruit of any sexual event only can be known

afterwards. Some events like incest and rape are very likely to damage the patient; sado-masochistic games are presumably not, in spite of physical and mental pain being a core ingredient. This is the essence of the paradox we need to deal with: sexual torture in a prison is damaging; sexual torture in a swinger club is not. What in the end determines, if a sexual event is healing or harming is if the person needs it to happen. It is such a complex understanding of sexuality we need to integrate in a pragmatic medical ethic.

What is the damage from sexual traumas?

Research has documented that sexual traumas can damage a person’s *sexuality*, *mental health* (i.e. self esteem), *physical health* (i.e. cause chronic pelvic pain and primary vulvodynia), *quality of life*, and *the character, mission of life and existence at large* (45-51). The many different damages are listed in table 2. Lack of more accurate research data makes it impossible to quantify the relative damages.

Table 2. Some of the most common negative consequences of sexual traumas

Psychodynamic damage on sexual life from sexual violations:

1. Loss of lust, as an expression of repression of the wish to have sex.
2. Loss of arousal, as the patient abstains from involving her mind, feelings and body with sex.
3. Loss of orgasmic potency. Because of repression, pleasure becomes less intense, and more local, and less transcendent
4. Pain during intercourse and chronic genital pain as the pelvis and the local tissue of the genitals are holding on to many painful emotions from the trauma. Primary vulvodynia
5. Nymphomania and sexualisation. Sometimes the person gets so identified with being a sexual being that all her purpose of life is redefined to the sexual area, making the woman a clinical nymphomania.
6. Symbiotic dependency. Happens often when sexual contact has substituted for care.

Psychodynamic damage from sexual violations on body, mind and existence:

1. Boredom, passivity, low self esteem, depression - symptoms from repression of power: mind, feelings, and body
2. Physical chronic pain i.e. low back pain, muscular tension pain
3. Low self esteem, existential "invisibility" - symptoms from repression of sexuality, feelings, gender and character
4. Emotional pain, unhappiness and meaninglessness - symptoms from repression of self and purpose of life
5. Lack of sense of coherence, discontinuation of relationships or alienation, with father, mother, brother, a physician etc., including interruption of care or treatment.
6. Mental disease, patients with borderline personality and schizophrenia have very often been sexually abused

Other problems arising from sex, sexual abuse, and self-abuse:

1. STDs and HIV/aids (52)
 2. Reproduction. Often the sexually violated patient will have problem with reproduction.
 3. Children. Children of rape, incest and abuse can be genetically defective. A dysfunctional family cannot give what they need for a normal psychosexual development.
 4. Alienation and sex-love split. Using sex as an expression of love might be very difficult, making love difficult, and arresting the spiritual and personal developmental of the patient. Often sexuality and love is compartmentalized in the persona life.
 5. Sex for fun and power-games. When the motivation is no longer the joy of sensual pleasure, sex becomes often more motivated by using it for fun, and to obtain power.
 6. Prostitution. Research has shown prostitution to be much more common among incest and rape victims; often the element of prostitution is a hidden trade of sex for money, food, accommodation, drugs or other material or immaterial benefits. Prostitution is associated with drug abuse, HIV-infections and an early death.
 7. Sexually abusive behaviour. Most sadly, many of the abused children will become child abusers themselves, if the problems are not solved in therapy, using manipulation, social pressure, or brute force towards other in the sexual area.
 8. Professional incest. Sadly many of the cases of professional incest might be carried out also by incest victims, which are unconsciously attracted to the professional position of power and legitimacy and to the therapeutic work with other victims, consciously or unconsciously motivated by their need to solve their own problems.
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How are we harmed by sexual traumas?

What is it exactly that is damaging about sexual abuse? A full scientific understanding of this question will presumably allow us to reverse most of the damaging effects of the sexual neglects, assaults and abuses, many of which are listed in table 2.

According to the life mission theory (45-51), what really damages us is what damages our philosophy of life. A negative decision taken during a painful traumatic event is cementing a repression of the painful emotion and thus a reducing of our existence as the repressed life-energy is not accessible for us any more. Accumulated negative beliefs and attitudes can destroy our health, quality of life and general abilities (35-37,41-43). Such negative life-decisions are “generalized justifications” by which our painful responsibility for the situation is transferred away from us (the self) and into the outer world represented by mind (53). Thorough analysis of complete lists of repressed, negative decisions recovered from extensive, sexual traumas in holistic existential therapy with sexually severely abused patient (37), illustrate this negative impact of the sexual abuse, giving us a good understanding of the damaging effect of sexual violation.

If we make sure that the person we are with is not overwhelmed by negative feelings and emotions we can be sure that the person is not traumatised; it does not matter in principle if we are taking the patient into difficult feelings related to sexuality or into different kinds of feelings. Feelings that can be contained are not harmful. From a Jungian perspective (54) there are three different sources of sexual traumas:

- (1) From the beginning of life we are created by a somewhat “impure”, sexual energy, causing what has been called “karmic traumas” (as discussed above)
- (2) We are adjusting to sexually imperfect and somewhat unhealthy parents in the womb and during childhood, setting up our internal circulation of sexual energy wrongly.
- (3) During childhood we are sensitive and very vulnerable and therefore inevitably accumulating sexual traumas from the contact with our parent, who unconsciously sometimes neglects us and sometimes

violates us. We are in addition sometimes overtly abused and traumatised sexually.

All this sums up to everybody being unavoidably sexually unhealthy with severe repression of sexual energy, inappropriate circulation of sexual energy etc. Some of us are more severely traumatised by sexual traumas. If we are severely violated i.e. as incest-victims this often makes us dysfunctional or even seriously ill. Often sexual violations causes mentally illness (i.e. borderline); sometimes it makes the victim behave irresponsibly i.e. becoming a prostitute; sometimes it gives inappropriate sexual behaviour (i.e. sexual aggression, sexual self-victimisation) (see table 2).

All sexual damage is basically about repressed feelings causing sexual blockages and lack of libido and negative sexual attitudes causing inappropriate or even destructive sexual behaviour. Symptoms of this are the many different kinds of sexual dysfunctions we notice in the clinic. As we need to go back to heal our old wound, every sexual event, even how negative, are likely to be a possibility of healing. This leads to the strange conclusion that a life-event is not in itself harmful; it will harm or help you depending on the way you work with it and take learning from it; this goes in principle for incest and rape too.

What is sexual healing?

How are we healed sexually, if we have been sexually traumatised? Sexual healing is what helps us free our repressed sexual energy and related feelings (54), thus raising libido and personal power. That is done by changing the negative attitudes, which can be seen by its effect, since it turns the person back to a normal interest in sexuality and to constructive sexual behaviour. Interestingly, sexual traumas often contain both pleasure and pain (38) and sexual violation is often extremely painful emotionally, but there is often also an element of pleasure causing a lot of additional guilt and shame. So, for sexual healing we need to integrate the traumas, but allowing both the sexual pleasure and the sexual pain to surface (38).

In therapy the use of the principle of similarity is most efficiently doing this. When the patient is given a stimulus similar to that, which originally caused the

problem, the sexual trauma will suddenly reappear in the patient's consciousness and sexuality will heal. Clinical holistic therapy has the tool of "controlled sexual abuse" (44), where a sexual violation is repeated symbolically, while the patient receives the holding and support that she missed during the violation, allowing her to integrate the sexual trauma and heal sexually.

It is not only in the clinic that the patient is helped by the principle of similarity; in real life everything bad seems to repeat itself until the day, where the patient is able to really understand and cope with it. Most interestingly many patients realise that they often have been co-creating the event together with the violator, because the event was needed for her to heal – i.e. a rape scene. This realisation often is almost unbearable, but assuming responsibility is what changes the pattern in real life, and after this the vulnerability causing the trauma will often disappear and everything change. Statistics shows the healing effect of traumatic events as "paradoxal growth" (29-33) and researchers have wondered if such results were artefacts, but from the theory of existential healing paradoxal growth (i.e. after rape) seems reasonable and likely to happen. This does not by any chance mean that rape should be excused or legalized. We just underline the fact that people with a background as victims often invite violators, because of a subconscious longing for healing and instinctively felt possible through a repetition of the trauma.

Sexual healing takes holding and processing (53), because without holding and support the patient cannot confront the past events that were overwhelmingly painful (or overwhelmingly pleasurable) and heal. Therapy must give the needed holding and as sex is related to the body, holding often needs to be physical, or even genital (55), as already Hippocrates and the old physicians discovered (1).

Most interestingly the need for physical holding in sexual healing is not always met – for ethical reasons. Many therapists have come to the understanding that the best way to avoid sexual abuse of the patient is by restraining oneself to never touch a patient. Such rules might work, when therapy is about changing behaviours, but in deep psychodynamic healing of sexuality they directly hinder the patient's

healing. The fear of sexuality and the derived rule of not touching the patient have caused the biggest problem in psychoanalysis, namely its well-known lack of efficiency (see below on "Freud's trap"). As soon as sexuality appears and libidinous energy is invested in the therapy, the longing for intimacy and touch appears; this longing is not just a longing for sex, it is a longing for sexual healing. So it is coming from a much deeper layer in the patient that normal sexuality and with a much larger force, because if it cannot be fulfilled it stays unfulfilled for years, but constantly hindering the patient to be healed. Often therapy takes 10 years, and a lot of mourning and sexual frustration is experienced in the end, but only small therapeutic progress in spite of so many years and thousands of hours of therapy. Here we have a damaging effect of sexual neglect in the therapy, combined with sometimes "financial exploration" of the patient.

Vulnerable teenagers and prostitution

The younger a person is the more vulnerable to sexual violations. Danish teenagers often start to have a sex life at the age of thirteen years, but they must be aware of the very special, intimate and emotionally difficult nature of sexuality at all times, and in spite of explicit sexual education by teachers in school, by parents and by their physician, early sexual experiences are often somewhat traumatising. The understanding amongst Danish physicians today is that it would be more sexually traumatising for the teenagers to be held back, but that is an issue that can be debated. The larger the age difference, the larger will the difference in power also be, and the more vulnerable the weakest partner will be. If both were keenly aware of the dangers and pitfalls of a sexual relationship, even an age difference could be harmless. Teenage prostitutes often have a history of sexual traumatising and live their life with friends "on the street" using heroin as self-medication for existential pain. The heroin is offered free by pushers, who later teach them to hook. Prostitution, also of adult women, can result in low quality of life (56)] and these women are often left completely without lust for life, with no sexual desire or orgasmic potency.

It is important to understand that teenagers are not yet adult or fully able to care for their own interests and lives, so it seems logical to forbid teenage prostitution. The law against teenage prostitution in the USA these days do definitely not stop it, as there are now an estimated number of 500.000 teenage prostitutes in USA (57). It is time to reconsider the situation and understand the sad consequences of laws against teenage prostitution, which only seem to marginalize and repress the vulnerable teenagers, to make them criminals and to impose on them an unbearable feeling of blame and guilt. The only solution we can see is to educate the whole population on the harmful effects of sexual abuse. If the society focused on healing its citizens and teaching them to treat sexual partners well in general, prostitution would be much less harmful.

In Denmark we have had what has been called the neo-sexual revolution (58), making sex as normal as eating and so legal and generally accepted, together with striptease, prostitution, and porno, that we now have publicly accepted brothels very much like the famous red light district in liberal Amsterdam and porno-canals on most TV-cables. Some politicians have even considered registering prostitutes and letting them pay taxes as ordinary, respected citizens. This new, relaxed attitude towards sexuality has allowed prostitutes and porno models to enter the public arena like popular television programs on the public national TV, and some have managed to be both the star of the gasoline-station porn-movie-market and a TV-celebrity at the same time. The conclusion by the Danish public seems to be, that soft prostitution and the porn industry does not in itself harm the girl. What is harmful is the lack of acceptance and self-acceptance coming from painful sexual experiences, with lack of love and care, awareness, respect, and acknowledgement of the soul of the sex-partner.

We thus believe that it is time to understand the direction of the development in the next generations towards full sexual liberation in the western society; it is important to legalise also prostitution, and to start educating the whole population on the real dangers of sexual relationships. These dangers come from people being simpleminded, spiritually undeveloped, and unconscious of their impact and their bad intentions.

Part 2: Ethical problems of sexological therapy and cam-bodywork

The use of holistic medicine, CAM and bodywork in Denmark

In Denmark both patients and physicians have questioned the efficiency of biomedicine (drugs). 40% of the population is chronically ill in spite of free health care and good quality hospitals. Several Cochrane analyses have shown, that the drugs being used often harm as much or even more than they benefit (59). This makes many patients return to holistic medicine and CAM, with 400,000 patients using it in 1990, 800,000 using it 2000 (60) and an estimated number of 1,600,000 using it 2010. Recent research has documented that psychodynamic psychotherapy is more efficient than psychiatric standard treatment (61-63), without having the adverse effects of drugs, making psychotherapy very popular. Problems related to the body, like chronic pain and sexual problems, are present with 50% of the population and more and more often being cured by holistic medicine (CAM-bodywork or psychotherapy combined), which seems surprisingly efficient (11-15).

The scientific synthesis of epidemiology, CAM and psychodynamic psychotherapy into scientific holistic medicine (clinical holistic medicine, CHM) (41-43) has given us a highly efficient, integrative treatments system, able to solve health problems for at least half of the patients (physical, mental, sexual, and existential health problems) in one year and 20 hours of therapy according to our recent clinical studies (11-15,65). In holistic medicine, like in all psychodynamic and existentially oriented therapies, the patient's body and sexuality becomes very important issues (54,64) and holistically and psychodynamically oriented physicians and therapists believe, as did the ancient Greek and Indian doctors, that a healthy sexuality is a basic condition for physical and mental health and well-being.

But when bodywork more or less directly addresses the patient's sexuality, many sexual feelings can be provoked in both patient and therapist, which demands a high ethical awareness and an ability to

discriminate sharply between acting out and treating the patient. This becomes even more complicated, when the therapist use their own sexuality to help the patient, as in the tool of being a patient's "substitute partner/surrogate partner" (21). The ethical consideration here has been, if in this classical example, the sexual intercourse during which the female therapist is curing the male patient's erectile dysfunction, is "abusing the patient's body" or "healing the patient's body". From a standard biomedical ethical perspective the behaviour of the therapist is definitely unethical; from a wiser, holistic-medical perspective the behaviour, which helped the patient and did him no harm, might actually be ethical conduct. All this indicates that things in this area are a little bit more complicated than we usually imagine, and that we need to be clearer about what ethical rules should guide contemporary and future holistic medicine.

Sexological manual therapy

With this recent development medicine is somewhat surprisingly returning to its roots, and medicine is coming back to the use of bodywork (1,20,44,55), including a number of intimate, medical, manual procedures (65-71) calling for ethical analysis. The direct work with the patients sexual energies and genitals as it happens in holistic sexology i.e. the treatment of vulvodynia with "acceptance through touch" (54) and "vaginal acupressure" (1,16,17) is not very different from what is happening in the regular gynaecologic pelvic exam and we have found it to be ethical and efficient, although still possibly somewhat alienating to a traditionally trained biomedical physician and to different cultures and traditions.

A much more direct, sexological tool is the feministically inspired, radical procedure of "direct sexual stimulation" involving therapist touch of female patient's vulva to assist the patient's accept of own genitals. Instruction in manual masturbation including use of pelvic floor, pelvic movements, sound on the breathing, sexual vulva, direct stimulation of clitoris or vagina (digital or with clitoral vibrator) (65-71), sexual fantasies, sexual breath work, stimulation of nipples and other erotic zones, use of clitoral vibrator, which has been

successfully used by Betty Dodson from the United States (73) to help women with anorgasmia and other sexual dysfunction. It includes the radical practice of all participants masturbating naked together in the therapy group and it is now practised by a dozen of Danish sexologists personally trained by Dodson. It has been used for almost a decade by over 500 female patients (65). Direct sexual stimulation has been used for many years for sexological research in the United States (69,71), Denmark (65) and many other countries (70) and especially the sexological research by psychoanalyst and body-therapist Wilhelm Reich (1897-1957). This method has been extremely important for our understanding of sexuality (71) and the use of direct sexual stimulation in the sexological clinics makes an ethical analysis of the method relevant.

When it comes to the use of a "substitute/surrogate partner" most find this not to be a violation of ethical rules, because of the fact that studies have documented the therapeutic value of this unconventional procedure with no reports of problems or patients harmed (21). It is quite clear that we need to learn a lesson about medical ethics from this. It is "holistic" in the widest sense of this word as the therapist uses his whole existence to help. But one might as well argue, that this practice is financial, if not sexual abuse of a love-sick patient, who comes to this love-sick therapist (73) for the sexual healing and end up being sexually exploited. Most interestingly there is a lot of sympathy for a female therapist using this method for helping a dysfunctional male patient, and a lot of scepticism for a male therapist helping a dysfunctional female patient, because traditionally women has been the sexual victims of abusive men, but when the doctor is female, the roles are inverted and the female is in power, so this argument is not valid.

Hippocratic ethics was undoubtedly born out of the need for control of the therapist's behaviour and stopping him from acting out, when sexually aroused from the close bodily encounter with his patient. Modern day physicians and therapists have honoured the tradition of medical ethics and all over the world physicians and therapists seem to agree about not acting out sexually. The more directly sexual issues are addressed in therapy, the stronger the sexual transference and counter-transference will be. When

as in psychoanalysis sex becomes the major focus and the patient starts work on their Oedipus complex containing some of the strongest sexual energies known to man, with often resulting in a mutual sexual interest going to an extreme level of intensity, and all too often leading to what we call “professional incest”. In psychodynamic psychotherapy there can also be a symbolic and verbal acting out, which has not been covered by the ethical rules. Most interestingly, a rule of not touching the patient is not really helping here. Quite the opposite this rule is a serious hindrance to the asexual, physical contact and holding necessary for releasing the sexual tension and allowing therapy to progress (53). In psychoanalysis, the ethical rules seem to create what we have called the “Freud’s trap”, keeping the sexually awakened, female patient coming to the therapist for many years in spite of never getting the sexual healing she longs for (74). So we believe that the ethical rules should most definitely be revised, if the major concern is the therapeutic progress of the patient.

Ethics is about doing good for the patient and avoiding doing harm; this is essential and should be kept in mind at all times, also when we analyse the ethics of radical and provocative manual sexological techniques. An ethical discussion is never about the moral of a society or about its laws or rules or about anything else. When a therapist uses his or her own sexuality as a tool to help others, for example when Betty Dodson masturbates before a group of female patients with anorgasmia, to excite them and teach them how to get an orgasm, or when she touches the patients genitals to improve a patient’s genital self-acceptance (72), the question is if this method is helping or harming the patient. Recent research has demonstrated that the method of direct sexual stimulation is extremely efficient and seemingly not harmful. It does not look like acting out on the videotape (72), but as she is serving her patients with her whole existence, using body, mind, spirit and heart. But we are still left with questions like: Is this an ethical practice? Is this a sexual relationship?

The concept of “substitute/surrogate partners” was bravely introduced by Masters and Johnson in 1959 (21). One of the most important contributions to the development of the scientific sexology came from a female doctor, who took the role as a substitute partner in the research program: “Finally a physician,

who openly admitted her curiosity towards the role as a substitute partner, offered her services... When she was convinced about the desperate need for such a partner for treatment of sexual malfunction of the unmarried man, she continued as substitute partner, and she contributed, both from her personal and professional experience, to develop the role to an optimal degree of efficiency” (21). This female physician obviously played an important role in achieving the impressive result of helping 32 of 41 dysfunctional male patients in the program. Her behaviour was never condemned or punished to our knowledge and the medical society thus accepted her behaviour as ethical, which still 50 years later is remarkable.

The conclusion from this work was that a doctor’s sexual relationship with a patient was beneficial, if the intention with the relationship was to cure the patient’s sexual problems and done with the necessary (written) consent. In many cases where physicians and patients have sexual relationships, there is no intention of curing or developing the patient; they happen from the simple and natural reason of sexual desire, combined with lack of self-control and lack of agreement with the ethical rules.

What about this method of “substitute/surrogate partnership” - is this acting out? Can this be ethical, in spite of the physician-patient-relationship being a mutual sexually satisfying relationship, when the scientific studies document that it most definitely helped the patients and did no harm? Can defining a substitute partnership be a solution for a doctor and a patient that continues to be hopelessly in love, in spite of not seeing each other, and even years going by?

Psychodynamic perspectives on sexuality and sexual development

To truly understand harm from sexual events we need to understand the nature of sexuality (54,64,69,71): What is sex? A simple answer is that sex is about inborn, sexual behaviour. Just feeling sexual pleasure or sexual desire when being with another person is not having sex; this is a completely internal thing in one’s own being. As we are sexual beings, our bodies behave much like animals; they are almost always

interested in sex. Our body often reacts sexually to other bodies.

Then we have sexual orientation. Freud said that we originally were polymorphous perverted children, but now as adults we are likely to be socialised into heterosexual, genital sexuality. This means that deep down in our repressed sexuality, we find everything of sexual interest. But this is even more complicated: When a person's psychosexual development is disturbed, the patient can be developmentally arrested at different stages, like the infantile autoerotic stage, the oral, anal or genital stage. Many schizophrenics seems to be poorly relating to the world coming from infantile autoerotism (64,75) and treating schizophrenics almost always include healing sexually (54,64,75). Sexual energy accumulated within our body, and within our relationship, as we invest our libidinous energy in it. Searles and other fine therapists noticed that only the patients we love and are able to invest our libidinous energy in are helped by the therapy (76). The investment of libidinous energy and the sexual interest in each other is not damaging, but in general helpful.

Another important aspect of sexuality is that we according to Jung are double sexed beings with the opposite sex inside, but not being expressed; we can therefore have auto sexuality, fantasy, masturbation etc. When we have sex, we project the opposite sex into our partner. Only this way we can feel the partner attractive. This makes all expressions of sexuality a mirroring of our internal state, and our sexual health a function of the flow or lack of flow of sexual energy within our self. Most unfortunately this natural inner circulation of sexual energy is highly vulnerable both to sexual violence and sexual neglect, especially in childhood, where we are totally dependent of relation to a sexual healthy father and mother. If mother and father are not able to circulate their own sexual energy freely and joyfully, this will according to Grof be felt already in the womb, and we will have inherited sexual disturbances with no traumatic course, but appearing in therapy as what has been called "karmic traumas". This is quite complicated as the patient in holistic psychodynamic psychotherapy or holistic breath work can present traumas from rape or incest, with events that never really happened giving problem of temporary "implanted memories", but such memories will always disappear, when the patient

realisation that this is energetically inherited "karmic traumas".

Freud noticed that everybody develops though a natural and necessary Oedipal phase, the boys wanting to marry their mother and the girls wanting to marry their father; he also noticed that most patients still had an unsolved issue with this called the famous Oedipus complex. All together this leaves us and every of our patients with a highly complex, personal, sexual history with something energetically inborn, something introjected at the foetal state, and always also with sexual traumas from childhood, where our father and mother sometimes did not show us the bodily and sexual interest we needed or violating our sexual borders when showing too much interest. Many female patients has been directly sexually violated in childhood (one in 5 or 7 according to most sources), some patients also violated or raped as adults and some have also violated other people, which seems to be even more harmful to them than being violated.

So we are sexual beings, coming from semen and egg, and from the very beginning created by sexuality. We come from sexual beings that were not entirely healthy in their sexual energies, because of a complex personal history, and we have lived a long life being sexually active in many ways, and been together with sexually active people with whom we have interacted, sometimes causing traumas, and sometimes healing traumas, and giving us our sexuality and life-energy back.

To be physically, mentally and existentially healthy we need a healthy flow of sexual life energy within our organism, and both mental and physical illness seems at least partly to come from blocked sexual energy, making rehabilitation of sexual health an issue of primary interest in the holistic medical clinic.

Part 3: Ethical problems of sexual physician-patient relationships

Let us now return to the difficult issue of physician-patient sex. How can we avoid that a sexual physician-patient relationship harms the patient? The first question we have to ask is what dangers such a relationship is putting the patient in and there are

several important, ethical reasons why a physician should not to have sex with his patient (22,23,54,64,73,77-80):

- (1) The patient's treatment is disrupted.
- (2) The patient's trust of therapists in general is destroyed.
- (3) The power is with the doctor/therapist making him able to sexually exploit a large fraction of his young female patients that admire him.
- (4) The patient who often takes the role of a child and the doctor being the parent can be attracted to the doctor, because of Oedipal sexual transferences, and a sexual relationship will block the needed solution of the Oedipus complex.
- (5) The physician exploiting his patients sexually will destroy the confidence and status not only of himself, but also of all other doctors.
- (6) The physician will most likely engage in the sexual relationship to act out on sexual counter-transference; by vesting the invested libidinous energy the physician waste the energy that could have set the patient free (76).
- (7) The physician will often be older and the patient young and vulnerable; this increases the danger of a sexual relationship being harmful.
- (8) The danger of the relationship being in conflict with the ethical rules of the physician's community and therefore having dire consequences for him.

From the physician's perspective a very good reason not to have sex with a patient is obviously that he has taken the Hippocratic oath: *Into whatsoever houses I enter, I will enter to help the sick, and I will abstain from all intentional wrongdoing and harm, especially from abusing the bodies of man or woman, bond or free* (1).

In spite of knowing this, many physicians and therapists engage in a sexual relationship with their patient, and through history many doctors have successfully married their patients. Sometimes a woman, who knew of an attractive doctor, became his patient intending to seduce him. It has been argued

that a patient is unable to give consent to a sexual relationship, and that such a relationship always is harmful (80). We have found no clear scientific evidence that a sexual relationship between therapist and physician is harmful. An eroticised relation can be used to heal the patient (81) giving some worrying indication that we might be much too negative in our fear of and attitude towards sexuality.

In practice, because of all the difficulties listed above, it is difficult for a physician to avoid harming a patient, if they become partners right away. But a conscious and ethical physician can carefully avoid the dangers one by one, and put up a strategy that makes it acceptable to relate intimately with the patient. According to the analysis above of what causes sexual traumas, we feel safe to conclude that in the case of the patient and the physician falling desperately in love, decent behaviour and awareness of the points above will save the patient from traumas. We recommend that the following steps are also taken, and propose this approach to be included in standard ethical rules for physicians and therapists:

- (1) Start by ending the professional relationship without hurrying, in such a way that the patient is either cured or transferred to another physician for continued treatment. Most doctors find it acceptable to start a relationship after termination of the patient-therapist relations, but it is wise to wait for at least six month before making the relation intimate. On the other hand it would be waste of life and love not to see each other; this might be the most difficult challenge, but it is very important and the physician must seek the help he needs to meet it.
- (2) End a relationship with a present partner if any and end it for good. Do it now and be without a partner for a while, to find your self. Take therapy for at least three month (10-20 sessions) to be sure that you do the right thing.
- (3) Assume full responsibility for the new relationship to the patient, admit it openly to everybody, and behave decently, loving and respectful at all times. If you hide it, you probably do not mean it and you are most

likely up to hurting you patient's heart seriously.

- (4) Be extremely explicit about the possibility of the relationship being temporary, in spite of intense and honest feelings of love and the best of intentions. The relationship may not last for ever as it might serve the purpose of personal development for both parties, not the purpose of finding a partner for life – in spite of both parties believing the later.
- (5) If and only if it feels right: Get married.

Such a relationship might be for life, but is always for learning. It is bound to be painful which both parties should be well aware of. Success in transforming the relationship from a professional to a personal relationship almost always takes a third person, which must be a coach or a therapist with experience in this area. This person will support the weakest part and balance the power often quite unbalanced between a physician and a patient, which is very good for both parties in the relationship. It is the privilege of the consciousness physician that he can turn such difficulties of potentially destructive and disastrous nature into a mutually beneficial learning experience.

Some physicians or therapists who do not know themselves well enough and who do not reflect upon their own existence in sufficient depth, feel urged to take the route of direct sexual involvement. Real troubles comes, when the relationship is first hidden and then suddenly involuntarily exposed, often leading to unlimited damage both to the patient and to the physician. The physician can loose his whole career, wife/husband and family, friends, and the earned position in the society. The patient will often be deeply hurt and loose faith in physicians/therapists and in therapy in general and can thus have remaining unsolved problems for many years thereafter.

It is only fair that these physicians are excluded from the medical society, although a more rational approach considering the patient would be to treat the misbehaving physician for his personal problems, to help him/her integrate his "mana" (54), which is projected into the patient. If the therapy is successful this would make it possible for him/her to be able to help the suffering patient, who might else be lost for good, or at least be out of therapeutic reach for years. The physician, who is not in love with his/her patient,

but voluntarily chooses to abuse his patient's body, finances, or the patient in any other way, can normally not be helped by therapy, as he/she insists on being evil (49). The only solution here is unfortunately the withdrawal of the medical licence, and often also imprisonment to protect other patients from being abused.

Discussion

Basically ethical rules are securing that people do not harm each other. Sexual ethics is about securing that we are not harming for example children with our inappropriate sexual behaviour. The trans-cultural taboo of incest is securing that parents do not sexually abuse children. The rule against adultery is securing the general population against STDs and it gives children at least some confidence in the man raising them being their father. The rule about the doctor not acting out allows the family to entrust the patient to the doctor's care and allows the patient to be able to undress safely, when needed for examination and treatment. Many of the ethical rules are thus extremely practical.

But other ethical rules are not so wise, i.e. the rule of not touching the patient, which is a completely new rule in medicine, arising from modern culture being very mental and far from the body. Most unfortunately these new "ethical rules" are extremely harmful to medicine and they may very well be the reason, why we have 40% of the whole population being physically and mentally ill today. Without the sexual healing of the patient we cannot at all heal the patient's body or mind so completely dependent on sexual health – the healthy circulation of the basic life-energy of our organism. We think that it is important that ethical rules are not made so strict that they are a hindrance to the natural, healthy processes of life, like people finding each other and wanting to be together for life. If the doctor-patient relationship is brought to a natural end, a physician and an ex-patient who love each other should be allowed to a relationship and marriage. We recommend that the medical ethical rules always are making this possible. Medical ethics has most unfortunately borrowed its rules from the anti-sexual moral attitudes of a conservative, Christian society, not from rational

scientific examination of induced harm from sexual abuse. Contemporary ethical rules are creating a lot of fear from touching the patients, fear of being accused of sexual abuse. This fear is very realistic as a physician who does bodywork is highly vulnerable to false accusations of sexual abuse. There seems to be no documentation that body-workers abuse their patients more than other physicians and therapists. We must encourage the medical societies to change the rules so that the patients can get the bodywork, therapeutic touch and manual sexological treatment they need, without their doctor fearing for his career.

In general sex is not harmful, but a natural and healthy part of life and a condition for a full, loving relationship between man and woman. A healthy sexuality is a condition for physical and mental health, and personal development of character, spirit and purpose of life. A full insight into sexuality is extremely important for knowing one self. A sexual relation between two adults can be harmful if:

- (1) there is an unloving relationship with the lack of awareness, respect, care, acceptance and/or acknowledgment of the other persons soul
- (2) there is a conflict of interest leading to power struggles and traumas (a physically, emotionally or spiritually painful experience, and a negative decision modifying existence (37))
- (3) the soul, mind, feelings, body, gender, integrity, wishes, status or power of the person are seduced, manipulated or invisibly violated
- (4) an important relationship is broken or damaged
- (5) care or a medical treatment is interrupted.

On the other hand, when a sexual relationship is not physically, emotionally or spiritually painful, when responsibility is not failed, when the person or the persons perception of self or other is not in any way violated or damaged, and when important relationships, care and treatment is not interrupted, sex is not harmful. Sex can be healing, and even a painful sexual event can induce sexual and existential healing according to the principle of similarity.

We have analysed the holistic sexological manual procedures and found them ethically acceptable. We found no ethical problems with holistic medical procedures that involve sexuality, like direct sexual stimulation, or substitute partnership. We did find problems with a physician having a sexual relationship with a patient, but no problem with the physician and the patient becoming partners in life after therapy is ended. Sexual transferences and counter-transferences not taken well care of can easily destroy both the life of the physician or therapist and the life of the patient. Sexual desires acted out without ethical consciousness are potentially harmful.

We believe that most societies of physicians and therapists have not understood sexuality well enough and that many ethical rules, i.e. the rule of not touching the patient in psychotherapy, are counterproductive and therefore not ethical, in spite of looking ethical at a first glance. Only through a deep understanding on the nature of sexuality and sexual trauma can we secure a truly ethical, beneficial and not harmful conduct as physicians and therapist. Ethical rules must come from wisdom, not from the contemporary moral of the society or the medical community.

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Positive effects, side effects and adverse events of intensive, clinical holistic therapy: A review of the program "Meet Yourself" characterized by intensive body-psychotherapy combined with mindfulness meditation at Mullingstorp in Sweden

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Abstract

To review and evaluate the side effects and negative effects of an intensive clinical holistic medicine (CHM) program in Sweden. Intensive clinical holistic therapy has since 1985 been used on the training facility "Mullingstorp" in Sweden for curing psychological, psychiatric and existential illnesses and improve quality of life. The treatment combines intensive, psychodynamic psychotherapy with intensive, emotionally releasing bodywork, and mindfulness meditation. The patients are often well-educated people with serious mental and existential issues. Recently it has been documented that patients with low QOL (quality of life) are able to improve or normalize (NNT=2) their SOC (sense of coherence) and other dimensions of health. At this centre about 4,000 patients were treated in the 1985-2009 period. From our review and personal communication with the centre there were no significant side effects found. Re-traumatisation: NNH>4,000, Brief reactive psychosis (patients with no previous history of psychosis/mental illness): NNH>4,000. Depression: NNH>4,000. Depersonalisation and derealisation: NNH>4,000. Implanted memories: NNH>4,000. Side effects from high-energy manipulations of the body: NNH=1,000 (small bone fractures that heal spontaneously, primarily broken ribs); NNH>4,000 (permanent physical problems). Suicide and suicide attempts: NNH>4,000. Suicide was found to be prevented. Hospitalisation for physical health problem: NNH>4,000. Hospitalisation for physical/mental health problem (patients with no prior psychotic events) during or 14 days after treatment: NNH>4,000. Interpretation: We conclude that intensive, clinical, holistic therapy is an efficient treatment for psychological, psychiatric and existential problems and illnesses, which is completely safe for the patient. The therapeutic value $TV=NNH/NNT>2,000$ or $TV=NNH/NNT=500$, if you include small bone fractures.

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Introduction

The aim of this review was to look at positive effects and adverse effects/side effects including negative event of intensive clinical holistic therapy, a subtype of integrative medicine only involving conversation and touch therapy in a holistic philosophical context. We found a training facility for existentially oriented body-mind therapy in Sweden, where the intervention called mind-body-medicine includes a combination of intensive psychodynamic psychotherapy with bodywork especially designed to release the most intensive emotions connected to relations, childhood, love, sexuality, life and death.

The centre "Mullingstorp Education and Health Centre" is an institute for advanced self-knowledge (<http://www.mullingstorp.com/english/>) established in 1985 by the physician Bengt Stern at his father's farm in Vikbolandet outside Norrköping and not far from Stockholm. Treatment consists of one-week of intervention, where people live at the training site and receive 50 hours of intensive holistic therapy. It has been established as a course in self-exploration, personal development and quality of life called "Meet yourself" in two stages. Each course can have up to 22 participants who will come for a week to live on site. The treatment combines body-psychotherapy with mindfulness meditation. It thus works with body, mind and spirit of the patient and it can therefore be perceived as "holistic medicine". Its basic idea is to support the patient in self-exploration and therefore called "clinical medicine". The patient is taken through a number of exercises that stimulates self-exploration and focus on the most important emotions related to physical and mental health and sexuality.

During its 34 years of existence, the centre has treated more than 4,000 patients. The founder of the centre, Bengt Stern, who developed the methods, passed away in 2002, but the centre and its leadership is continued by his wife, Viktoria Eriksson, who worked closely with him at the centre since 1990.

Experiences from mind-body self development

Several studies have been conducted on the mind-body self development course established by Bengt Stern (1). This course can be seen as clinical holistic medicine (CHM) in the non-drug treatment with body-mind therapy in the tradition of Hippocrates (2). Study I on 107 consecutively chosen patients that entered the therapy, described the health status and quality of life of the participants, when they entered the treatment (3) and study II documenting the therapeutic effect of the therapy by measuring 83 patients before and after therapy (4).

The patients are often well-educated people, who come to Mullingstorp in a poor existential condition (1,3,4). At least 25% of them were thinking about suicide and about 1% revealed that they already were determined to commit suicide, when they arrived to the course. Their average QOL (quality of life) before treatment was similar to mentally ill patients (3) and a large fraction of the patients, presumably one in three, had been under psychiatric treatment before they arrived to the course, without experiencing cure for their illnesses. Many of these patients were severely depressed and still on antidepressant drugs, when they started therapy at Mullingstorp Centre (1,3,4).

In study I (3), six of the 13 subscales for HRQOL (health related QOL) showed pronounced and significantly low starting values ($p < 0.001$) in the initial study group ($n=107$), namely: emotional health, cognitive, family and partner functioning. This is unusual in a group with such high education level. Long-term sick leave (>6 months) was three times more common than in the general population.

The outcome measures in Study II (4) were changes in HRQOL and SOC-13 (sense of coherence) in the followed-up study group ($n=83$) and in the control group ($n=69$). Eight subscales of HRQOL showed clinically significant improvements in the study group ($>9\%$, $p < 0.01$), namely: general health (9%), emotional well-being (negative 45% and positive 26%), cognitive functioning (24%), sleep (15%), pain (10%), role limitations due to emotional health (22%) and family functioning (16%). Self-rated SOC was improved in the study group after the course (5,1%, $p < 0.01$), documenting that existential healing took place (5-9). Use of psychoactive drugs decreased

in the young participants after the course (1,3,4). The most significant increase was in well-being, a dimension of QOL, where most patients seem to benefit (NNT=2 or less).

A new dissertation (10) under the auspices of the Karolinska Institutet in Sweden based upon these findings concluded that the therapeutic intervention actually normalized the mental health and quality of life of the participants: "This study group consisting of well-educated women and men rated their initial emotional health unexpectedly low. After the course there was a significant improvement in HRQOL and SOC, up towards normal population values. The studies (1,3,4) also found that:

- It is possible to perform a scientific evaluation even of soft, self-assessment data describing subjective experiences after a course intervention based on a theoretical background of integrative medicine.
- The selected questionnaire methods gave a reasonable spectrum of clear, clinically significant changes mixed with stable values. The method seemed particularly effective for discovering the state of emotional well-being.
- Allowing spontaneous comments in data collection can be well worth the effort in a previously unexplored area, enabling the capture of completely new phenomena.
- The course duration of seven days means that people with fraught memories have time to get past the initial shock phase of the crisis process and facilitate the emotions dealing with it in a constructive way.
- The course intervention was able to improve the participants' HRQOL and SOC.
- The course improved cognitive and emotional function, which in turn increased motivation. It thus has the potential to be used as a starting point in rehabilitation for working life, for people who are forced for health reasons to cope with a readjustment crisis and establish a foundation for a new orientation.

Conservatively estimated from the presented data in the two papers and the thesis we find the Number Needed to Treat (NNT) to cure the patients from their

subjective existential problems, bad mental health, and low quality of life to be around 2 (NNT=2). A more accurate analysis with dichotomised data more useful for evaluating NNT might well show a NNT=1.

The actual intervention is described in details in the book "Feeling bad is a good start" (1). The tools used are, according to the systematic described for advanced CHM-tools (11), at the CHM-level 8 tools called "direct, existential healing of love, power, and sexuality" (to tool "controlled violence" in the "birth exercise" and the tools of therapeutic repression and "controlled sexual abuse" in the "fascist exercise"); level 9 tools called "mind-expanding and consciousness-transformative techniques", (in the "death exercise"); and level 10 called "techniques that transgress the personal borders" (used in the "birth exercise" as there is no return once you have accepted to participate in this exercise - you cannot withdraw your consent, but you must go through the process of psychological re-birth, which is logical as you provoke the hardest of psychological resistances in this exercise. In the "birth exercise" Bengt Stern and later the therapists of Mullingstorp even used induction of strong pain by pinching the patient's inner thighs or testicles, or suffocation by holding a hand over mouth and nose, as an effective tool for motivating the patients to fight for their lives and reconnect to the fundamental will to live. In his book Bengt Stern wrote about the birth exercise, in spite of the use of level 10 tools, that he never observed side effects or adverse events from it (1)). Bengt Stern and his therapists thus took all the most powerful tools known to holistic medicine into use, when they developed the "Meet Yourself" course.

As it is not likely that the side effects of some exercises annihilate the side effects from other, the course is thus able to reveal both the adverse effects of all the individual therapeutic tools, and from any combination of tools combined. The exercises include the use of methods, which in the CHM-system is called level 8. The rationale for using these methods is the famous healing principle of similarity, well described in the scientific experience described in the EU-masters degree in complementary, integrative and psychosocial health sciences at Interuniversity College, Graz (12-26).

When something in today's medicine is highly efficient, it normally comes with a price. The next most important research issue, after documenting the positive effect of the therapy, is therefore to investigate the adverse effects/side effect and negative events of this kind of intervention.

Since more than 4,000 patients have now been treated at Mullingstorp during the last 35 years, it allows us to make a very detailed list of the side effects of and negative events like suicide related to this treatment, and also to document the probability of these side effects and negative events for the patient. A similar investigation in clinical holistic medicine in Denmark did not find any significant side effects or negative event, but this was done on only 500 patients (27). Smaller studies on treatment of physical, mental, sexual, existential, psychological, and working ability problems all documented no adverse effects and no negative events (28-36) and it is also known that similar interventions with holistic sexology had no side effects or negative effects (37).

But this is the first time, where the treatment of a very large group of patients can be evaluated. And the methods and exercises used here are the most intensive that has ever been used in holistic medicine, so if this therapy (meet yourself course) is safe, then clinical holistic medicine is recommended as a safe intervention.

The therapy

The psychodynamic psychotherapy is of the Jungian type, with focus on archetypes, energy, charkas, and the human collective (un)unconscious. The bodywork is of the psychodramatic type, where central gestalts of life – birth, all kinds of human interactions and finally death – are confronted, and old repressed emotions released. The reflections and learning are facilitated by silence, mindfulness meditation, sharing and psychodynamic group processes. The holistic, existential therapy is organized in the frame of a seven-day intensive experiential learning course.

The “birth exercise” is taking the participant through all the phases of the psychological birth as described by Stanislav Grof (38-56). Stanislav Grof (born July 1, 1931 in Prague, Czechoslovakia) is one of the founders of the field of transpersonal

psychology and a pioneering researcher into the use of altered states of consciousness for purposes of analysing, healing, growth, and insight of the humanly psyche. The “fascist exercise” take the participant through the experience of all traumatic aspects of human interaction, facing good and evil, sexual and non-sexual repression, violence and abuse, and even for the patients that need to integrate such a traumatic experience, into psychological annihilation (38-56). The “death exercise” takes the participant into his or her psychological death, the experience of personal ruin and ultimate disaster, allowing the person to enter the process of re-metamorphosis back to the real, genuine self (38-70).

Review of the meet yourself course

Retrospective analysis of 4,000 patient's side effects and adverse events in relations to the treatment with intensive, clinical holistic medicine (body-mind therapy and mindfulness meditation). The side effects/adverse effects that we looked for are all side effects that were found in any study or case report on psychotherapy or bodywork (see table 1), combined with the negative events of suicide, suicide attempts, and hospitalisation. Developmental crisis is a natural and integral part of this therapy and happens in one in two of the patients, but this item is not included in the review. We have not included “hypomania” in table 2; hypomania – a state of very good mood, full of hope and optimism, that sometimes can be annoying to a person's family, friends, and colleagues at work, but this is not a psychotic state as the state of mania - is sometimes considered to be a side effect.

We believe it to be a natural reaction to lifetime long self-repression, and therefore an important aspect of the healing process for patients who are existentially repressed at the beginning of the course. Hypomania also provides the patient with the energy necessary for a complete makeover of personal life, improving all relationships, changing work and carrier plans to fit the new direction in life and so forth. Therefore we have excluded hypomania from the review of side effects. The number of patients developing hypomania lasting longer than 48 hours was estimated to 1%.

If an episode with psychotic elements lasted less than 48 hours it was registered as “a psychotic healing crises”, which was present in more than one percent of the patients, but seen as a normal part of treating

severe mental problems that included childhood psychosis (psychosis in the patient’s childhood).

Table 1. Side effects/adverse effects caused by psychotherapy, bodywork, and psychotherapy combined with bodywork (27)

Psychotherapy
(1) Re-traumatisation
(2) Brief reactive psychosis
(3) Depression (and hypomania)
(4) Depersonalisation and derealisation
(5) Implanted memories and implanted philosophy
(6) Iatrogenic disturbances
(7) Negative effects of hospitalisation
(8) Studies with no side effects, or side effects less than the side effects of drugs
(9) Paradoxal findings: Psychotherapy diminished side effects
Bodywork
(1) Brief reactive psychosis
(2) High-energy manipulations of the body in chiropractics can cause damage to the spine of vulnerable patients.
(3) Damage to the body if the therapist is unaware of illnesses or for example fractures.
Psychotherapy and bodywork (i.e. in manual sexology (the sexological examination), clinical holistic medicine (CHM) and holotropic breath work)
(1) Brief reactive psychosis
(2) Implanted memories and implanted philosophy
(3) (Developmental crises)

Collection of data for this review

Data was collected at two occasions. First in connection with the first author’s participation in the “meet yourself” course in August, 2004, where the prevalence of side effects was studied on the participants and side effects and negative events were discussed with the therapists and second by a complementary interview given by Viktoria Eriksson to the first author in March 2009, where all numbers of patients with all significant side effects (like bone fractures) and life events (like suicide-attempts, suicides, hospitalisation, brief reactive psychoses etc) were reviewed. This allowed for this review to include all patients treated from January 1985 to February 2009. The data (table 2 and 3 and the description of the results) was sent to Victoria

Eriksson for final correction and she returned her corrections.

As significant side effects and negative events are easy to identify and remember and as they obviously always made a lasting impression on Bengt and Viktoria, since they used every event to learn from in order to improve the course. The data collected on the training site some years ago on the insignificant and much more prevalent side effects like skin-abrasions, blue marks, and tenderness has a larger uncertainty, as they are estimated from the number of such events during the course that the first author participated in. The total number of participants is calculated from the average number of participants each year. During the course, data of side effects and negative events was documented in two ways. Before the course a comprehensive 10-page questionnaire on QOL and past life events was filled out by the participants

revealing earlier psychotic episodes, history of psychiatric treatment, use of antidepressant and antipsychotic drugs etc. During the course all therapeutic processes was observed by a physician that recorded all observed side effects and negative events and in the end of the course all participants

were interviewed about positive and negative experiences. After the course all participants were asked to report problems and negative events to the training centre.

Table 2. Side effects/adverse effects caused by Bengt Stern's one week intervention with intensive, clinical, holistic medicine on 4,000 patients

Side effects/ Adverse events	Number of patients	NNH
1. Re-traumatization	0	>4,000
2. a) Brief reactive psychosis, with no history of previous psychotic, mental illness	0 of 2,000	>2,000
b) Brief reactive psychosis, with a history of previous mental illness	2 of 2,000	1,000
3. Depression	0	>4,000
4. Depersonalisation and derealization	0	>4,000
5. Implanted memories and implanted philosophy	0	>4,000
6. Iatrogenic disturbances	0	>4,000
7. Negative effects of stay at Mullingstorp	0	>4,000
8. a) Side effects from high-energy manipulations of the body: Insignificant physical problems lasting less than one week (skin-abrasions, blue marks, and tenderness)	400	10
b) Side effects from high-energy manipulations of the body: Problems lasting less than three months (fractures etc.)	4	1,000
c) Side effects from high-energy manipulations of the body: Permanent physical problems.	0	>4,000
9. Damage to the body if the therapist is unaware of illnesses, fractures etc.	0	>4,000

Table 3. Negative events during or after Bengt Stern's one-week intervention with intensive, clinical, holistic medicine on 4,000 patients (* this patient had a history of previous mental illness)

Negative events		
1. Suicide attempt in relation to treatment – on the training site/during treatment	0	>4,000
2. Suicide attempt in relation to treatment – up to 3 month after treatment	0	>4,000
3. Committed suicide in relation to treatment – on the training site/during treatment	0	>4,000
4. Committed suicide in relation to treatment	0	>4,000

– up to 3 month after treatment			
5.	Hospitalisation for physical health problem, during or up to 14 days after treatment	0	>4,000
6.	Hospitalisation for mental health problem, during or up to 14 days after treatment	1*	4,000

Concerning long term follow up the procedure does still not exclude the possibility of side-effects only showing some time after the course, but because of limited resources there has been no long-term follow up. It is worth noticing that long-term follow up for side effects is not a normal procedure in biomedicine, so we believe that in this review the side effects and negative events are documented with the same standard as it is done in normal medical research.

Skin-abrasions were relatively common as the “birth exercise” happened on an uncovered cement floor. The history of HIV was therefore carefully collected from all participants before the therapy, to avoid participants or therapists being infected. There is no known case of HIV-infection from the participation in the course.

Table 2 shows that none had significant side effects from the CHM-therapy except for four, who had fractures. Three participants suffered from a broken rib, and one from a broken hand-bone (the boat bone). None suffered from re-traumatisation, understood as getting a new trauma on top of an old one, and therefore feeling worse after treatment than before. None of the participants without a medical record of previous psychiatric treatment and psychosis suffered from “brief reactive psychosis”, but a few patients that had psychotic events before got these again.

Depression – meaning that a patient was more depressed after the treatment than before – did not happen, but a significant number of patients experienced hypomania, in this study defined as “a state of excitement and renewed interest in life and sexuality, that people around them found to be embarrassing”. None suffered from the experience of losing themselves; on the other hand the experience of re-finding one self was very common (NNT=2) (1,3,4). As mentioned above three patients suffered from a broken rib, and one from a broken finger, but no patient suffered permanent damage.

Table 3 shows the negative events from the CHM-therapy. None has ever, to the knowledge of

Viktoria Eriksson and the other therapists, attempted to commit suicide on the training facility or immediately after that in relation to the treatment. Quite contrary, a significant number of the patients, estimated to around 50, came into treatment determined to end their own life by own hand, and all of these patients let go of their negative decision during the treatment. None committed suicide after the course. During the period 1980-2009 two patients did commit suicide, but very long time after the treatment: In 1988 a 55-year old, Norwegian woman committed suicide two years after a course and more recently a 60-year old man committed suicide about one year after the course. Viktoria Eriksson does not believe that these suicides were provoked by the course, and the time-delay does not imply that this could be a consequence of a reactive psychosis from the course or a depression developed due to the therapy. The national health authorities did not investigate the incidents, which imply that there was suspicion of responsibility. In 2006 a 30 year-old woman was hospitalised in a mental hospital during the treatment, since she had a previous history of psychiatric illness.

The physical damage (small bone fractures) was not so serious that hospitalisation was necessary. All in all we found no significant side effects or negative events from the treatment of 4,000 patients with intensive, clinical holistic therapy at Mullingstorp Centre.

Discussion

One could argue that there should not be skin-abrasions, blue marks, tenderness or broken fingers from medical treatments. One could also question whether it is ethical or not to use coercion as a therapeutic tool (see level 10 in tools (11)). It is important to understand that the patients quite often are severely mentally ill before they arrive and even

sometimes have decided to commit suicide, but that only the necessary intensity of therapy is applied. The therapy seems to be life saving for some of the most ill patients. Taking this into consideration, and the fact that no side effect was permanent, and the fact that less than one in a thousand had a fracture, the degree of intensity from the tools used seems to us very reasonable. In comparison, one in 1,000 dies during full anaesthetics, and one patient out of 10 gets an infection in a normal hospital, and one patient in two or less gets adverse effects from antipsychotic medication.

The bone fractures are a direct result of the physical intensity in the birth exercise. Why this intensity of physical pressure is necessary is well explained in the book (1). One could argue that therapy should not happen on a rough cement floor, but this element is actually a therapeutic part of the therapy. The cement floor minimize the pressure you need to put on each person in order to obtain spontaneous regression into the most painful experience of your life and the problematic aspects of your own physical birth bringing that person into a healing process and experiencing psychological re-birth. The intensity of this therapy is what makes it possible to help such a large fraction of even the most severely mentally ill patients (NNT=2), even with acute and severe psychiatric and existential problems in such a short span of time.

The risk for physical damage is still very small compared to a ski-tour, and no patients were seriously harmed, making the whole treatment much safer than five days on ski. Two patients with a psychiatric history and previous psychosis events had brief reactive psychosis, and one of these needed brief mental health hospitalisation after the course. We believe this to be a prolonged healing crisis, and no significant harm has done to these patients, who habitually get into psychotic states.

The most controversial idea in this work seems to be the necessity of the developmental crises (47,48). Bengt Stern's idea was that you need to confront the negative emotions, gestalts and trauma to heal, and this is in accordance with the old Hippocratic tradition. Accelerated personal development leads to intensive existential crisis, and only if the patient is well guarded and well supported, can this kind of

intensive healing be possible. Mullingstorp Centre seems to provide exactly this to its participants.

As it is not likely that the side effects and adverse events of some of the therapeutic exercises annihilate the side effects from others, the "Meet Yourself" course is thus able to reveal both the adverse effects of all the individual therapeutic tools, and the side effects and negative events from any combination of CHM tools. Combined with the finding that there is no significant adverse effects and negative events from Bengt Stern's therapy on any of more than 4,000 patients, allows us to conclude that it is a complete safe treatment. The fact that it seems to prevent suicide, in accordance with earlier similar findings (71), makes it even safer, and makes it recommendable even for the severely mentally ill patients, which is known often to commit suicide after initiation of psychiatric treatment and during hospitalisation (72).

The healing potential of CHM has yet to be established; single patients with of cancer and schizophrenia have already been helped with this method (73-77) and the next logical step seems to study the effect of CHM more systematically with the most ill patients. In principle even HIV could be cured in this way (78).

Conclusions

We found that at least one in two (NNT=2) were helped, with no significant side effect or negative events from intensive clinical holistic medicine (mind-body-medicine) conducted at the Mullingstorp Centre in Sweden, except for small bone-fractures that healed without hospitalisation (NNH=1,000). We found NNH>2,000 for mental hospitalisation and NNH>2,000 for brief reactive psychosis (patients with no prior history of mental illness). No patient committed suicide or attempted to commit suicide during the treatment. We actually found that suicide was prevented by the CHM-treatment, as about 1% of the patients had decided to commit suicide before the course, but let go of this decision during treatment, which is a very important finding. The existential healing crisis is not a side effect, but a part of the therapy.

Former studies have shown that mental health and quality of life is normalized for most patients (NNT=2) (1,3,4). Combined with the complete lack of side effects and adverse events, we conclude that intensive, clinical holistic medicine is safe and an efficient help for patients with physical, mental, psychological and existential problems, who want an improved quality of life.

Judged from the existing data we recommend that CHM is used for mentally ill patients, also the severely ill, and we also recommend that the efficacy of CHM be tested for physical illnesses. We recommend national funding of research that documents the effect of CHM for existential problems, sexual dysfunctions, and the more serious diseases like diabetes Type 1, schizophrenia, cancer and even HIV.

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Schisandra: A systematic review by the Natural Standard Research Collaboration

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Abstract

To evaluate the scientific evidence on schisandra including expert opinion, folkloric precedent, history, pharmacology, kinetics/dynamics, interactions, adverse effects, toxicology, and dosing. This review serves as a clinical support tool. Methods: Electronic searches were conducted in ten databases, 20 additional journals (not indexed in common databases) and bibliographies from 50 selected secondary references. No restrictions were placed on language or quality of publications. All literature collected pertained to efficacy in humans, dosing, precautions, adverse effects, use in pregnancy/lactation, interactions, alteration of laboratory assays, and mechanisms of action. Standardized inclusion/exclusion criteria are utilized for selection. Grades were assigned using an evidence-based grading rationale. Results: The review found that there was limited human evidence supporting the safety and effectiveness of schisandra. Five indications/effects had supportive evidence based upon the available human and non-human evidence: adaptogenic effects, eczema, familial Mediterranean fever (FMF), liver disease, and its effects on vision. Conclusions: There is a lack of information corroborating the traditional uses of this medicinal herb, although preliminary evidence suggests theoretical interactions and potential uses for these and other indications. However, high-quality scientific inquiry, which examines the safety and efficacy of schisandra as an integrative therapy, is still required.

Keywords: Herbs and supplements, Schisandra (*Schisandra chinensis*, *Schisandra spenantha*), systematic review, interactions, pharmacology.

Introduction

Schisandra (also spelled schizandra) is a vining shrub native to northern and northeast China. In ancient folklore, schisandra was used as an antiseptic, astringent, and tonic, and in Chinese medicine for centuries as a kidney tonic and sedative, as well as a

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treatment for insomnia, coughing, and thirst. Schisandra is often used in Chinese herbal formulas as a "harmonizing agent" based on its purported ability to complement and coordinate well with other herbs. Schisandra is a constituent in various herbal combination products, including Chu Shi Tang (for eczema) (1), shengmai san for coronary heart disease (2), and Equiguard™ for prostate cancer (3).

The sun-dried fruit and berries of *Schisandra chinensis* are called wu wei zi in Chinese, translated as "five-flavor fruit", based on its five tastes (salty, sweet, sour, pungent, and bitter). The dried fruit is formed into powder, tincture, and wine, and made into capsules, teas, and decoctions, either as a single ingredient or in a combination herbal product.

Traditional Chinese medicine (TCM) characterizes schisandra as warm in nature and sour in taste with its main function on "lung-kidney" and "liver-heart." The berries of schisandra are used in TCM to promote the production of body fluids; increase the body's resistance to a broad spectrum of adverse biological, chemical, and physical effects; and to help the body handle stress.

In the 1940s scientific research was carried out on *Schisandra chinensis* in Russia, and in the 1950s, schisandra was considered for its cardiopulmonary and CNS effects. More recently, it has been used in China for its hepatoprotective and immunomodulating effects, and in Russia for its adaptogenic effects (increased attention, concentration, coordination, endurance, and strength), which has led to the use of schisandra as a sports supplement.

Multiple animal and *in vitro* studies support the hepatoprotective and antioxidant properties of schisandra. In human and animal study, findings have shown that schisandra benefits enzymes that function in the liver.

Preliminary evidence suggests the potential for beneficial effects in patients with hepatitis. Since schisandra has been proposed as beneficial for various historical uses and is an ingredient in marketed products in the United States, an investigation of its safety and efficacy in popular use was necessary.

Methods

To prepare each Natural Standard review, electronic searches are conducted in nine databases, including AMED, CANCERLIT, CINAHL, CISCOP, the Cochrane Library, EMBASE, HerbMed, International Pharmaceutical Abstracts, Medline, and NAPRALERT. Search terms include all the common name(s), scientific name(s), and all listed synonyms for each topic (Schisandra synonyms/common names/related substances: Schisandra, Schizandra, xiwuweizi, magnolia vine). Hand searches were conducted of 20 additional journals (not indexed in common databases), and of bibliographies from 50 selected secondary references. No restrictions were placed on language or quality of publications.

Researchers in the field of complementary and alternative medicine (CAM) were consulted for access to additional references or ongoing research.

All literature was collected pertaining to efficacy in humans (regardless of study designs, quality, or language), dosing, precautions, adverse effects, use in pregnancy/lactation, interactions, alteration of laboratory assays, and mechanisms of action (*in vitro*, animal research, human data). Standardized inclusion/exclusion criteria are utilized for selection. Data extraction and analysis were performed by healthcare professional conducting clinical work and/or research at academic centers, using standardized instruments that pertain to each review section (defining inclusion/exclusion criteria and analytic techniques, including validated measures of study quality.)

Data were verified by a second reviewer. Blinded review was conducted by multidisciplinary research-clinical faculty at major academic centers with expertise in epidemiology and biostatistics, pharmacology, toxicology, complementary and alternative medicine (CAM) research, and clinical practice.

In cases of editorial disagreement, a three-member panel of the Editorial Board addresses conflicts, and consults experts when applicable. Authors of studies were contacted when clarification was required.

Results

Based upon human study, the review revealed five functions/disorders for which schisandra is used to treat: adaptogen (function), hepatoprotective (function), vision (function), eczema (disorder), and Familial Mediterranean Fever (FMF) (disorder). Dosing, safety and potential interactions are also summarized.

Dosing

Based on the available evidence from clinical trials and case reports reporting on schisandra's use as an adaptogen, oral doses of up to 91.1mg, standardized to 3.1mg schisandrin and gamma-schisandrin, have been well tolerated when taken twice daily in adults (4). For the treatment of liver disease, a dose of 7.5mg of HpPro (a natural analog of schisandrin C, a constituent of schisandra) has been taken three times daily for up to four weeks (5). Topically, a 5% solution of schisandra has been used for 20-25 days to assess effects on vision (6). There is insufficient available evidence to report on schisandra dosing in the pediatric population.

Traditionally, schisandra has been taken as an extract, tincture, crude plant, tea decoction, syrup, dried fruit, powder, and capsules. Doses range from 200-2,000mg daily for extract; up to 4mL (or 30 drops) 2-3 times daily for schisandra tincture; up to 6g daily for crude schisandra; 1-15g (1-3 c.) daily for decoction of schisandra berries; 1.5-15g daily for up to 100 days of dried schisandra fruit; 1.5-6g daily of schisandra powder; or 1.5g daily in capsule form. One teaspoon of schisandra has been added to fruit juice, tea decoctions, herbal brews, and wine, or taken as a liquid herbal extract and/or capsule.

Safety

Systematic study of schisandra is currently lacking in the available literature. Doses of up to 91.1mg twice daily have been well tolerated in clinical study (4). Schisandra fruit or its extract are possibly safe when used orally in patients with liver disease, based on traditional use and evidence from animal studies that

indicates possible hepatoprotective actions (7-11). Caution is advised in patients with any of the following disorders: skin diseases, due to schisandra's actions as a photosensitizer *in vitro* (12); neurological disorders, due to secondary reports of CNS depression (13); diabetes, due to alterations in blood glucose, although there is controversy in this area (14,15); or bleeding disorders, due to proposed platelet-activating factor antagonist activity (16). Based on anecdotal evidence, caution is also suggested for patients with gastroesophageal reflux or peptic ulcer disease, high intracranial pressure, or high blood pressure. Schisandra is not recommended in pregnant or lactating women due to lack of sufficient data. Schisandra fruit extract may have adaptogenic effects on uterine myotonic activity (17) and two triterpenoid acids from *Schisandra propinqua* have shown cytotoxic effects against rat luteal cells *in vitro* (18). Schisandra is likely unsafe and should be avoided in patients allergic to schisandra, any of its constituents, or members of the Schisandraceae family. Anecdotally, allergic skin rashes and hives have been reported in some patients. Other purported side effects may include drowsiness, CNS stimulating effects, rare profound central nervous system depression, heartburn, acid indigestion, increased gastric activity, abdominal upset, decreased appetite, and stomach pain. Toxic symptoms may include mydriasis and tonic convulsions (19).

Interactions

Despite a lack of systematic study and reported interactions, schisandra may interact with herbs, supplements, drugs, foods or laboratory tests. Interactions listed below are theoretical and based on animal or laboratory study. Human evidence is lacking in this area, although caution is advised.

- *Acetaminophen*: Based on *in vitro* study, *Schisandra chinensis* and its constituents may exhibit protective effects against acetaminophen (20,21).
- *Adaptogens*: Based on animal study, standardized extracts from schisandra fruit may reduce fatigue and increase athletic performance (22,23). In humans,

homeopathic preparations of *Schisandra chinensis* have demonstrated potential adaptogenic effects (4).

- *Anthelmintics*: Based on *in vitro* study, boiled water schisandra extracts may have anthelmintic effects (24). The *in vitro* study found that boiled water schisandra extracts had wormicidal effects on *Clonorchis sinensis* (24).
- *Antibiotics*: Based on *in vitro* study, ethanol extracts of *Schisandra chinensis* may induce antibacterial activity against *Helicobacter pylori* (25).
- *Anticoagulants and antiplatelets*: Based on laboratory study, schisandra may have strong platelet-activating factor antagonist activity (16). Additionally, *Schisandra chinensis* increased the metabolism of warfarin in animal study (26). This effect was likely due to induction of CYP450 2C9.
- *Antidiabetics*: Based on secondary sources, schisandra may lower blood sugar levels. In animal study, schisandra tincture has not shown antidiabetic effects (15). However, in animal partial hepatectomy study, a constituent of schisandra decreased plasma insulin (14). In animal study, both insulin and schisandrin B were hepatoprotective in xenobiotic-induced toxicity under diabetic conditions (27).
- *Anti inflammatory agents*: In *in vitro* and animal study, schisandra extract has been examined for anti-inflammatory effects (28). Gomisins A (TJN-101), a constituent of schisandra, inhibits arachidonic acid release and leukotriene biosynthesis *in vitro*; leukotriene biosynthesis is involved in the inflammatory response (29). However, schisandra has also displayed strong antagonism for platelet-activating factor in laboratory studies (16).
- *Antilipemic agents*: In animal study, wuweizisu C and gomisins A, constituents of schisandra, decreased serum triglyceride levels (30,31).
- *Antineoplastic agents*: Constituents of schisandra have demonstrated anticancer effects both in animal models and in cultured cancer cells (18,32-38).
- *Antioxidants*: In animal study, *Schisandra chinensis* inhibited formation of thiobarbituric acid reactive substance (TBARS), a measurement of oxidative activity (39). Antioxidant effects of schisandra have also been demonstrated *in vitro* (40,41). In animal study, schisandrin B protected against hepatic oxidative damage (11,42-50).
- *Antiulcer agents*: Based on animal and *in vitro* study, schisandra may have antiulcer effects (25,51).
- *Antiviral/antiretroviral agents*: Based on *in vitro* study, constituents of schisandra may exhibit anti-HBsAg effects and antihepatitis E antigen (HBeAg) activity (52-54), and may inhibit HIV-1 replication or demonstrate other anti-HIV activities (55-57).
- *Athletic performance enhancers*: In animal study, a combination herbal product containing *Schisandra chinensis* prolonged swimming duration and increased tolerance against oxygen deficiency (58).
- *Cardiovascular agents*: Constituents of schisandra may have effects on isolated smooth muscle cells (59). Exercise-induced increased heart rate was reduced in race and polo horses given a standardized extract from schisandra fruit (22,23). Schisandra and its constituents exhibited cardioprotective activity in various animal and organ models, mainly offering benefit against hypoxia and reperfusion injuries (60-64). Contractile force recovered faster in animals treated with schisandrin B in an ischemia-reperfusion model (64).
- *Cholinergic agonists*: In animal study with mice, schisandra extracts had dose-dependent additive or antagonistic effects to nicotine and other cholinomimetic agents (19).
- *CNS depressants*: In animal study, schisandra or its constituents had neurological effects, including exerting inhibitory effects on the central nervous system (13).
- *Cyclosporine*: Two cases have been reported of an interaction between cyclosporine and

- dephenyl-dimethyl-dicarboxylate (PMC), a hepatotonic drug derived from fructus schisandrae elements, in kidney transplant patients with chronic hepatitis (65). Close monitoring of the cyclosporine levels are necessary during PMC therapy.
- *Cytochrome P450 metabolized agents*: Based on laboratory, *in vitro*, and animal studies, *Schisandra chinensis* or gomisin A may increase cytochrome P450 levels (31,66,67), specifically CYP3A and 2C isozymes (26,68,69). However, cytochrome P450 levels were not affected in some animal studies (70) and have been shown to be normalized in carbon tetrachloride-treated animals (71,72). Animal study has not shown an effect on the plasma concentration profile of nifedipine (69). In animal and *in vitro* study, schisandra has been reported to activate various hepatic enzymes such as glutathione reductase (10,66,73,74).
 - *Doxorubicin (Adriamycin®)*: Schisandra has exhibited cardioprotective effects against adriamycin-induced rat heart mitochondrial toxicity *in vitro* (75,76). The formation of malondialdehyde (a naturally occurring product of lipid peroxidation), as well as lysis, disintegration, and membrane rigidification, were reduced in mitochondria treated with adriamycin after treatment with various schisandra constituents.
 - *Estrogens/phytoestrogens*: In animal study, constituents of schisandra led to a decrease in serum estradiol levels (73).
 - *Halothane*: In halothane-treated liver microsomal suspension, metabolism of halothane to toxic components was inhibited (77).
 - *Herbs/supplements*: Wormwood, ginger, bupleurum, and danshen have been used in the treatment of irritable bowel syndrome and may have synergistic effects with schisandra.
 - *Immunosuppressants*: *In vitro*, gomisin C inhibited respiratory burst in neutrophils (78). In humans with hepatitis B, monocyte levels dropped, whereas levels of circulating white blood cells, neutrophils, and lymphocytes did not change (79). Wurenchun, an extract of *Schisandra chinensis*, appears to enhance cortisone-induced immunosuppressive effects (80).
 - *Morphine*: Based on secondary sources, schisandra may counteract respiratory paralysis caused by morphine overdose.
 - *Neurologic agents*: In animal study, schisandra or its constituents had neurological effects, including improving amnesia and exerting inhibitory effects on the central nervous system (13,81). Schisandra extracts enhanced the passive-avoidance response in tacrine-treated animals (46). In tert-butylhydroperoxide-treated animals, schisandrins B reduced cerebral toxicity and lipid peroxidation (82). *In vitro*, a methanolic acid extract of dried schisandra fruit attenuated glutamate-induced neurotoxicity (83). In animal study, a combination herbal product containing *Schisandra chinensis* improved cognitive deficiency following sleep reduction; it also increased spontaneous activity, antagonized the inhibition induced by diazepam (Valium®), and shortened the sleeping time caused by sodium pentobarbital (58).
 - *Parasympathomimetics*: In animal study, schisandra extracts had dose-dependent additive or antagonistic effects to nicotine and other cholinomimetic agents (19).
 - *Phenobarbital*: Based on pharmacological study, *Schisandra incarnata* may prolong the sleeping time induced by phenobarbital (84).
 - *Photosensitizing agents*: *In vitro*, schisandra acts as a photoprotector at low concentrations and as a photosensitizer at high concentrations (12).
 - *Reserpine*: In animal study, schisandra extracts potentiated the effect of reserpine (19).
 - *Sedatives*: In animal study, schisandra or its constituents had neurological effects, including exerting inhibitory effects on the central nervous system (13). In animal study, a combination herbal product containing *Schisandra chinensis* antagonized the inhibition induced by diazepam (Valium®), and shortened the sleeping time

caused by sodium pentobarbital (58). However, based on pharmacological study, *Schisandra incarnata* may prolong the sleeping time induced by phenobarbital (84). In animal study, gomisin A shortened the hexobarbital-induced sleeping time (31).

- *Seldane*: Based on secondary sources, concomitant use of seldane and schisandra may not be advised due to increased side effects of seldane, such as cardiac arrhythmia.
- *Tacrine*: In tacrine-treated animals, pretreatment with schisandrin B enhanced the passive-avoidance response (46).
- *Tacrolimus*: Schisandra appears to increase the bioavailability and decrease the clearance of tacrolimus (85). Plasma levels of tacrolimus may be increased.
- *Vasodilators*: In a rat thoracic aorta organ system stimulated to contract, schisandra fruit extract elicited a transient relaxing response (86). In human study, *Schisandra chinensis* and *Bryonia alba* extracts increased the concentration of nitric oxide in blood plasma and saliva (4). Constituents of schisandra may have effects on isolated smooth muscle cells (59).

Efficacy

Schisandra has been used in traditional medicine, but validation of its efficacy using high-quality randomized, controlled trials is lacking. Currently, there is preliminary evidence for schisandra's use as an adaptogen and for its beneficial effects in the treatment of liver disease, eczema, familial Mediterranean fever, and improving vision acuity. Summaries are presented below, along with grades of effectiveness, which are based on objective grading criteria (see table 1). A condition, disease or function receives a grade in the table when there is popular use in humans with or without supportive evidence from basic science/theory, or emerging human evidence in the literature. Table 2 summarizes the sum of available human studies.

Adaptogen	C
Eczema	C
Familial Mediterranean Fever (FMF)	C
Liver disease	C
Vision	C

- *Adaptogen*: Schisandra has been used traditionally in Chinese medicine as a blood tonifier, and in Russia as an adaptogen. It is believed to reinforce and strengthen the nonspecific resistance of the body to physical, chemical, or biological stressors. As such, modern medicine has begun to acknowledge its potential to increase physical coordination, concentration, and endurance, and to decrease fatigue. Several animal studies in horses and rodents have shown potential benefit. Based on these observations, schisandra has been suggested to be useful as an adaptogen. In a double-blind, randomized controlled trial, Panossian et al. compared the adaptogenic effects of *Schisandra chinensis* and *Bryonia alba* extracts in 109 athletes of varying skill levels (4). Patients were randomized to receive either *Bryonia alba* or *Schisandra chinensis* (91.1mg standardized to contain 3.1mg schisandrin and gamma-schisandrin) twice daily. Outcome measures were evaluated by monitoring the increase in nitric oxide (NO) and cortisol in blood and saliva, which is usually increased by heavy exercise. After giving the subjects the schisandra extracts, salivary NO was not increased, which showed the adaptogenic benefit of the extracts. Also, the athletes taking the extracts showed results that correlated with increased physical performance. One of the limitations of this study was that data were not tabulated and labeled correctly. In addition, the data were poorly presented, which made evaluation difficult. The gender of the subjects, exact dosage of bryonia tablets given, duration of treatment, and the time of NO level testing after treatment, among other important aspects of the study, were often omitted in the report. Additionally, what part of the herb the extracts were made from was

never mentioned; though it was assumed that the fruit was used. Nonetheless, the study did demonstrate a significant benefit of

schisandra and warrants a larger, more well controlled study.

Table 1. Natural Standard Grading Scale™ © 2009 www.naturalstandard.com Grades reflect the level of available scientific evidence in support of the efficacy of a given therapy for a specific indication. Expert opinion and folkloric precedent are not included in this assessment. Evidence of harm is considered separately; the below grades apply only to evidence of benefit. *Objective criteria are derived from validated instruments for evaluating study quality, including the 5-point scale developed by Jadad et al., in which a score below 4 is considered to indicate lesser quality methodologically (Jadad AR, Moore RA, Carroll D, Jenkinson C, Reynolds DJ, Gavaghan DJ, McQuay HJ. Assessing the quality of reports of randomized clinical trials: is blinding necessary? *Controlled Clinical Trials* 1996; 17[1]:1-12)

Level of Evidence Grade	Criteria
A (Strong Scientific Evidence)	Statistically significant evidence of benefit from >2 properly randomized trials (RCTs), OR evidence from one properly conducted RCT AND one properly conducted meta-analysis, OR evidence from multiple RCTs with a clear majority of the properly conducted trials showing statistically significant evidence of benefit AND with supporting evidence in basic science, animal studies, or theory.
B (Good Scientific Evidence)	Statistically significant evidence of benefit from 1-2 properly randomized trials, OR evidence of benefit from ≥ 1 properly conducted meta-analysis OR evidence of benefit from >1 cohort/case-control/non-randomized trials AND with supporting evidence in basic science, animal studies, or theory. <i>This grade applies to situations in which a well designed randomized controlled trial reports negative results but stands in contrast to the positive efficacy results of multiple other less well designed trials or a well designed meta-analysis, while awaiting confirmatory evidence from an additional well designed randomized controlled trial.</i>
C (Unclear or conflicting scientific evidence)	Evidence of benefit from ≥ 1 small RCT(s) without adequate size, power, statistical significance, or quality of design by objective criteria,* OR conflicting evidence from multiple RCTs without a clear majority of the properly conducted trials showing evidence of benefit or ineffectiveness, OR evidence of benefit from ≥ 1 cohort/case-control/non-randomized trials AND without supporting evidence in basic science, animal studies, or theory, OR evidence of efficacy only from basic science, animal studies, or theory.
D (Fair Negative Scientific Evidence)	Statistically significant negative evidence (i.e., lack of evidence of benefit) from cohort/case-control/non-randomized trials, AND evidence in basic science, animal studies, or theory suggesting a lack of benefit. <i>This grade also applies to situations in which >1 well designed randomized controlled trial reports negative results, notwithstanding the existence of positive efficacy results reported from other less well designed trials or a meta-analysis. (Note: if there is ≥ 1 negative randomized controlled trials that are well designed and highly compelling, this will result in a grade of "F" notwithstanding positive results from other less well designed studies.)</i>
F (Strong Negative Scientific Evidence)	Statistically significant negative evidence (i.e. lack of evidence of benefit) from ≥ 1 properly randomized adequately powered trial(s) of high-quality design by objective criteria.*

Table 2. Summary of findings of schisandra administration in human trials. *N*: The total number of subjects included in a study (treatment group plus placebo group). *Statistically Significant?*: Results are noted as being statistically significant if a study's authors report statistical significance, or if quantitative evidence of significance is present (such as p values). *Quality of Study*: A numerical score between 0-5 is assigned according to the Jadad validated scale. *Magnitude of Benefit*: This summarizes how strong a benefit is: small, medium, large, or none. *Absolute Risk Reduction*: This describes the difference between the percent of people in the control/placebo group experiencing a specific outcome (control event rate), and the percent of people in the experimental/therapy group experiencing that same outcome (experimental event rate). Mathematically, Absolute risk reduction (ARR) equals experimental event rate minus control event rate. *Number Needed to Treat*: This is the number of patients who would need to use the therapy under investigation, for the period of time described in the study, in order for one person to experience the specified benefit. It is calculated by dividing the Absolute Risk Reduction into 1 (1/ARR). NA = not applicable

Condition Treated	Study Type	Author, Year	N	Statistically Significant Results?	Quality of Study: 0-2=poor 3-4=good 5=excellent	Magnitude of Benefit (how strong is the effect?)	Absolute Risk Reduction	# of Patients Needed to Treat for 1 Outcome	Comments
Adaptogen	Randomized, controlled equivalence trial (double-blind)	Panosia n1999	109	Yes	2	Medium	NA	NA	Poor study with encouraging results.
Liver disease	Randomized controlled equivalence trial (crossover)	Akbar, 1998	20	Yes	4	Large	61	2	Child type of hepatitis A chronic hepatitis patients treated with 22.5mg HpPro (natural schisandrin C analog) daily.
Liver disease	Before-and-after comparison	Akbar, 1998	56	Yes	NA	Large	NA	NA	HpPro (natural schisandrin C analog), 22.5mg daily in patients with acute and chronic liver diseases.

- *Eczema*: There is a currently a lack of available sufficient evidence to determine if schisandra is an efficacious treatment for eczema. In a before-and-after comparison trial, 56 patients with eczema (24 male, 32 female), age 2.5 to 76 years, were treated with the combination herbal product Chu Shi Tang, which contained 9g of schisandra (1). After 1-6 courses of treatment, 20 cases were cured, 24 cases were very improved, eight cases were moderately improved, and four

cases were unaffected. The overall effective rate was 78.6%. No side effects were noted. This combination product contained many herbs, only one of which was schisandra. Therefore, a clear conclusion cannot be made regarding the effectiveness of schisandra independently. Further study using immunotherapeutic preparations of schisandra is required before conclusions can be drawn.

- **Familial Mediterranean Fever (FMF):** There is currently a lack of sufficient evidence to determine if schisandra is an efficacious treatment for familial Mediterranean fever (FMF). Results from a limited study which investigated the effect of schisandra in combination with other herbs suggest the potential for benefit for this purpose. In a randomized, controlled study that examined the effect of ImmunoGuard®, containing a standardized fixed combination of *Schisandra chinensis* (100mg), *Andrographis paniculata* Nees. (50mg), *Eleutherococcus senticosus* Maxim., and *Glycyrrhiza glabra* L. (10mg), on symptoms of FMF in 24 male and female patients (87). Patients were treated with four ImmunoGuard® tablets, three times daily for one month, or placebo. The primary outcome measures were the physician's evaluation of duration, frequency, and severity of attacks and the patient's self-evaluation of symptoms. Duration, frequency, and severity of attacks all showed significant improvement in the ImmunoGuard® group as compared with the placebo. The effect of schisandra alone cannot be determined from this study. Further study is required before conclusions can be drawn.
- **Liver disease:** The efficacy of schisandra as a hepatoprotective agent has been demonstrated in multiple animal and *in vitro* models (7-11). Several components possess strong antioxidant activity, acting to enhance the hepatic glutathione antioxidant system by inducing liver microsomal cytochrome P450 and stimulating glycogen in proteins and the liver (11,42-50,88). Many of the lignans in schisandra seed extract (combined and as purified constituents) have been reported to regenerate liver tissue by lowering SGPT (serum glutamic pyruvate transaminase) levels, a key marker for hepatitis and liver disorders (89). Many of these studies have evaluated purified constituents, making it difficult to assess usage of the whole herb, but these observations have suggested that schisandra could be a potential treatment for liver disease. In clinical study, the effect of schisandrin C, a purified component, has been examined with good initial evidence in favor of schisandra for patients with acute and chronic liver diseases (5). In an open trial, after four weeks of administration of HpPro (7.5mg orally three times daily), subjects with acute hepatitis, chronic hepatitis, and fatty liver showed a rapid decrease of alanine aminotransferase (ALT) and aspartate aminotransferase (AST), while AST and ALT decreased slowly in subjects with liver cirrhosis. The authors suggested that a higher dosage for a longer duration is warranted to assess correct dosing for liver cirrhosis patients in future studies. This initial study was limited by the lack of a placebo control. Akbar et al. also conducted a prospective, randomized, crossover, controlled study in which 20 cases of Child A chronic hepatitis were treated with either HpPro or a mixture of known drugs (5). Patients were randomized to receive either HpPro at a dose of 7.5mg three times daily or a mixture of drugs commonly used in Indonesia as a liver protective agent for one week (methionine, choline bitartrate, aneurine HCl, nicotinamide, panthenol, biotin, folic acid, and vitamins B2, B6, and E). Liver function tests were used to measure outcome. After one week of treatment, the HpPro group showed a decrease of ALT and AST ($p=0.035$) while after the second week, only AST ($p=0.038$), but not ALT ($p=0.096$), was reduced. No side effects of HpPro were observed. This was a promising study with significant results; however, a larger study of longer duration is necessary to clearly establish the benefits of schisandra and its use in chronic liver disease. Future studies are warranted to assess the long-term efficacy and safety of schisandra vs. standard therapies.
- **Vision:** Based on limited available data, visual acuity was examined following use of 5% schisandra. Although there was preliminary evidence of improvement, there is currently a lack of sufficient evidence to

recommend for or against the use of schisandra in improving visual acuity. Minejeva et al (6) assessed the effect of schisandra in improving visual acuity of nearsighted children. Subjects received external application of a 5% solution of schisandra for 20-25 days. The treatment included three courses of treatments with two months between. Results demonstrated an improvement in visual acuity in 70% of the subjects; however, this treatment was not successful in patients with malignant myopia. This study is limited by a lack of a placebo control.

Conclusions

The use of schisandra in North America is limited, and only a small number of studies have currently been published in English. Much of the published research is in Chinese, Japanese, or Russian. Reported evidence is equivocal and preliminary. Studies addressing the effectiveness of schisandra as a drug are needed first on animals and then in humans. High-quality human data regarding safety, effectiveness, adverse effects, and dosing are warranted because the effects of schisandra alone are still unknown. Based on this review, preliminary evidence suggests theoretical interactions and potential uses, but there is a lack of information corroborating the traditional uses of this medicinal herb. High-quality scientific evidence that investigates the safety and efficacy of schisandra as an integrative therapy is recommended.

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Life mission theory IX: Integrative, ethical theory

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Abstract

We have presented an integral ethical theory with three dimensions: 1) intent, 2) outcome and 3) the quality of the act, well known from a) the duty ethics, b) the utilitarian ethics and c) the feministic ethics. This theory makes it possible to give a complex evaluation of the ethics of a complex holistic medical or sexological treatment. We have introduced a new “rule of integrative ethics” that allows us to evaluate the medical ethics of complex therapeutic behaviour. This ethical model is useful for clinical holistic medicine, especially to evaluate the ethics of concrete therapeutic actions in advanced holistic medical and sexological treatment. An integrative medical ethic is useful for teaching ethics to holistic therapists and physicians and for training students in holistic medicine.

Keywords: Medical ethics, integrative medicine, Zen, sexuality, holistic sexology, healing, clinical holistic medicine, crazy wisdom, holy madness, CAM.

Introduction

Ethics is the philosophy and science about doing good. It must be discriminated from the moral of society, which is the set of moral rules that a specific society requests its members to respect and follow. Medical ethics can sometimes be in conflict with the morals of society; it can be immoral to kill but ethical to perform euthanasia or it can be immoral for 13-year old teenagers to have sex but ethical to give them birth control. In a society physicians often receive permission to violate moral rules of society, if the actions are well based in medical ethics. Therefore it is urgent that the principles of medical ethics are clear, logical, fair and practical.

The medical ethics has its roots with Hippocrates (460-377 BCE), who worked with non-drug therapy. His aim was to help people cure their diseases by stepping into character, knowing themselves, and using all their talents to create value in the world. One thing that could seriously harm a physician’s ability to

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help was if his reputation was destroyed, if he was mistrusted, or if he destroyed his therapeutic relationships by having sex with his patients. All this meant special demands and conduct for the behaviour of a physician, hence the famous medical ethics (1).

With the establishment of the Research Clinic for Holistic Medicine in 1997, expanding to the Research Clinic for Holistic Medicine and Sexology in 2003, and into the Nordic School of Holistic Medicine in 2004, all under the auspices of the Quality of Life Research Center in Copenhagen, we have gone back to *clinical medicine*, i.e. a medicine that is *examination and cure in the same process* (2-4). For almost two decades we have been doing research in non-drug medicine - clinical holistic medicine - which is basically the combination of conversation and touch therapy (5-9). Of talking and touching, touching is far the most emotional, and the most difficult to master. In spite of this, it is well known that bodywork and touch therapy has no adverse effects, if it is done gently and without use of perfumed, aromatic oils (10). Even the most vulnerable and fragile of patients, the mentally ill children and teenagers has been shown to benefit from therapeutic touch (11), but even if you avoid extremely vigorous touch, the patient can still be violated sexually, hence the classical Hippocratic rule of the physician avoiding abusing his patients sexually. We know of no therapist that does not agree in this simple and basic rule of professional behaviour. So this is simple.

What is not so simple is to create value for the patient just by talking and touching. When the therapist's words and behaviour is used as medicine – when the doctor is himself the tool (12) - the need for a clear and practical medical ethics becomes obvious. Most unfortunately medical ethics has not developed much since Hippocrates, while the ethics as a philosophical subject had undergone a tremendous development. Most unfortunately, philosophical ethics had divided into three major schools, none of them completely efficient in guiding the practice of medicine and therapy. We therefore in our research project on clinical holistic medicine started to develop an integrated medical ethics that could fill the gap (13).

As teachers of the therapy and the training of therapists we have assumed responsibility for our patients and for our student's behaviour. The practical

training of the student to behave optimally together with the patient was what most urgently forced us to work on formulating a new more comprehensive medical ethic.

Holistic medicine and ethics

The Nordic style of holistic medicine and therapy is somewhat different from many other countries, especially America. In the Nordic countries sexology is often an integrated part of the medical clinic, while in other parts of the world the sexological clinics are separated from the medical facilities. In the US, a doctor is rarely a sexologist and a sexologist is rarely a doctor. In Europe, strongly inspired by Freud (14), Jung (15,16) Reich (17) and many other therapists, researchers and sexologists (18-20) including many physicians has included work with the patient's sexuality in their clinical work.

As most other holistic therapists we believe that the process of healing one's existence comes about when sufficient resources are available for the patient. Our concept for giving this support is the four steps of 1) love, 2) trust, 3) holding and 4) processing the patient (3-9). This often leads to close intimacy between the therapist and the patient, often leading further into re-parenting and spontaneous regression into the most emotionally painful childhood and adolescent life events. The extreme closeness and intimacy needed for the patient's healing and the material of the patient's case story is not always as neutral to the therapist as wished for. The experienced therapist knows how to deal with all kinds of reactions, from intense emotional suffering, resentment and aggression, to transference, projections of love, strength and desire, all the way up to sexual excitement.

In the beginning the student and the inexperienced therapist often feels it both awkward and somewhat flattering, when the patient falls in love with them. The reaction to the patient turning on sexually, are often either disgust and condemnation or excitement and desire. The student is before anything a human being with his/her own repressed material, own vulnerable borders, and own sexuality. The repressed material can be activated, the borders

violated, the sexual desire awakened, and from this arises many problems for most students.

It takes about 10 minutes to read the standard medical ethical rules for a student and unfortunately the sexual desire is often not well controlled by such rules. The inexperienced student is often in a very difficult situation regarding ethics, because of the rules being very tempting and very easy to go about. The only solid thing granting an ethical behaviour is the therapist being deeply founded in his/her own inner ethics, or “natural ethics” known from philosophy. The fundamental idea is that every man has an ethical nature, which often must be discovered in serious self-contemplation; what is almost always discovered is that in the essence of our soul, we are loving beings who want to contribute with something of value to our fellow men.

Sexual issues in clinical practice

A rule will often seem ridiculous, when reality comes marching in and a young man and a young woman fall in love and want each other. Such a relationship will often appear more important than anything else, including the whole education and medical carrier. In this situation ethical rules are much more likely to make the involved persons keep the relationship secret than to make them abstain from having the relationship.

When it comes to personal development, secrecy about a relationship between a patient and a therapist or student with elements of love and sexuality is almost certain to disturb or even arrest it. Applying standard ethical rules, which often cannot be respected even by experienced therapists to the students, are therefore not only meaningless, but even damaging to the learning and development of the student. As we definitely need our students to be ethical and well behaved therapists, the problem is now what kind of ethics we need to impose on them as their teachers, or more precisely: how we can make them solve their own ethical problems by doing a thorough analyses of their personal ethics and the consequent medical ethics.

If possible to formulate at all, we need an ethical theory to guide this important endeavour; we need a general and fundamental understanding of human

ethics to enlighten all students and therapists about our deeply ethical nature and the extreme value of ethics. In addition to such a theory we need a strategy for couching the students into the development of a perfectly ethical practice.

The use of ethics

First we need to understand that ethics is meant to guide our actions in order to do good for others in this life. Judging and punishing is generally not good. It leads to conditioned learning (Pavlovian, unconscious learning), with reflex inhibitions and accumulations of life-pain, thus crippling of the soul and existence, instead of facilitating conscious learning, awareness and enlightenment. If we want to create a community of conscious and responsible people, we need everybody to develop a high degree of self-esteem, a full permission to acting on any urge, and a flexible system of feedback to notice impact of any action and efficient learning. The environment must be open and friendly, and everybody must assume that the other person come with a good intent.

Ethics can be used to judge the actions of other people, but being judgemental is often not of any value, unless the offender is completely expelled from the society. If one can choose between being a good example and being judgemental, the impact on a family or on the community will normally be a hundred times more constructive if you elect to be the good example. Rules are often carried in our minds and not in our hearts, making them easy to neglect, when a person can gain a personal advantage or can avoid confronting a neurotic pattern of behaviour dictated by un-integrated life-pain.

Depending on the understanding of human nature, ethics is something natural that must be looked for and found at the bottom of your soul, or something un-natural that must be imposed on man from the outside world. The life-mission theory (21-28) states that everybody the essentially in his soul carry a wish to do good in the world, using specific talents and gifts. According to this theory ethics is not only something that we can find and discover within ourselves, but something that is a direct expression of our innermost nature. Doing good for other people is what life is about. Doing good and making a

difference in the world is the meaning of life, the fundamental reason why we are here. The more ethical rules, the easier it is to go into the mind, to go to a place of judging another person, and to loose connection to the heart and deep nature of self; ideally therefore we all carry a non-rule based ethics, customized to completely fit our own understanding of life and self.

A timeline strategy for integrating ethics

There have been three major directions in ethical thinking: the duty ethics, the utilitarian ethics and the feministic ethics. With duty ethics the intention is what is important. If you kill a person with no intention whatsoever to do so, your action can still be ethical. The utilitarian ethics looks at the result of the action: if the person died, the action was wrong, even if you desperately tried to help him as a physician. The feministic thinkers have been looking very much into the balance between the male and the female components in ethical situations.

To integrate these three seemingly contradictory ethical philosophies has been a very difficult task, but obviously this is what must be done for us to have the best ethics, as most people will choose the combination of a good intention, good result and balanced actions. Only a fanatic will say that we just need to look into our heart, the result of our action is not important. Only an opportunistic person deprived of any scruple will say that we can be as evil as we want, as long as it maximizes the profit for me or for the world at large. And only a person with no roots into reality would state that now is all that counts, intention and result are not important at all.

So how can the three different ethical perspectives become integrated into a common ethical theory for use in holistic medical practice? A simple way is to use the timeline: Before an action we must look at our intention (or the intention of another person, directly if possible, or through his/her statement of the intent), we must look at the probable outcome of our different choices of action, and for each of them we must visualise the events that will come in order to see which line of events born from

these different possible actions will be the most harmonious.

In the middle of an action, after choosing the fundamental direction, we must keep an eye on our intent to be sure not to depart from an ethical route. Due to the emotional aspects involved, we must be keenly aware to interact in our best way, reflect and at all time notice our impact in order to evaluate if there is anything in our behaviour, understanding, or perspective that we need to correct. Finally we must be certain that every present situation is balanced between female and male energies, not being too much coloured by the element of “water” or of too much “fire”.

After the action we must contemplate on what we did, how we did it, and what we accomplished. Did I come from a good intent or did I catch myself coming from my shadow (25)? Did I act in fine balance, respecting both the male and the female aspects of the universe? Did I do the good I intended? What did I learn? What is the urge in myself and in the space and universe that I now feel? What will be my next step? Is there something or some relationship I involuntarily damaged, which I now need to repair before I can move forward?

An ethical theory based on the theory of existence

To create a formal theory of ethics we need to map the dimensions of existence relevant for human ethics and to be sure to encompass the totality. The extended version of the life mission theory called the theory of talent (23) gives fundamental dimensions of human existence: love/intent, power/consciousness and gender/sexuality. Interestingly, these three dimensions correspond to the three ethical perspectives of duty ethics (love/intention), utilitarian ethics (power/consciousness), and feministic ethics (gender/balance between the male and the female). That makes the life mission theory an excellent framework for an ethical theory with the axes: 1) Intent, 2) impact, and 3) balance between male and female.

In a way, the ethical debate is done with, if one can use such a simple theoretical framework for ethical guidance in all our actions. The strength of

such a model is that it invites anybody who knows it to look for these dimensions in themselves, and thus it helps developing natural ethics. This is especially important where a flawless ethics is a must, as in the training of students in holistic medicine.

A strategy for coaching

It only takes about ten minutes to read and explain the ethical rules of physicians or other therapists to a class of students. The issue most intensely stressed is the ethical rules regarding sexuality. Sexual abuse cannot be tolerated and just one student or physician caught in severe misconduct can bring shame over a whole hospital or university, actually over the whole medical society. In spite of this obvious fact, sexual misconduct has continuously been a problem, ever since the ethical rules handed down by Hippocrates.

In the modern medical clinic, sexual abuse during the therapy is extremely rare, as people not being able to control their sexual behaviour are likely to be regarded as compulsive sexual offenders and sent away for psychiatric care. The problem is when a physician or student and a patient fall in love. In this situation everything including the education or whole medical career loses its significance, compared to this relationship now commencing. In practice it is almost impossible to keep the two parties from each other and even awareness of the strict ethical rules forbidding a sexual relationship will most likely make the two persons engage in a hidden relationship instead and anyway.

Case study one

A 50-year old, married psychotherapist and his 27-year old patient fell in love. She was in his therapy group. They started a sexual relationship, which they kept secret for about 6 months, until the day when she finally broke down and told another person that he drank and had sexually abused her. He was drinking, because he had severe emotional problems from this double life: a sexually highly dissatisfying life in his marriage and in the darkest secrecy, a promiscuous life with prostitutes and now also the sexual abuse of a patient. She had not been able to get help from

another therapist, neither could she tell her girlfriends about the relationship, because she was afraid that the new therapist or some of the girlfriends would denounce him and thus ruin his career. After this incident the patient was supported and refused to see him again, which he insisted. Only after she had threatened him with the possibility of reporting to the ethical committee of the psychotherapist association did he stop bothering her. The psychotherapist is still working as a therapist. The patient is now in therapy healing her wounded heart and body, but the new therapy is facing severe difficulties, because of her serious distrust and intentions of her new therapist. She has seemingly been severely damaged existentially by the abusive relationship.

This situation is unfortunately not unusual and in one study 23% of the incest victims reported a new sexual violation from their therapist (29). Seemingly we are facing a paradox: all the ethical rules are working fine, except with the people, who really need them. Instead of helping, the ethical rules seem to be a destructive barrier making it impossible to talk about what is really going on, making the patients and therapist who fall in love and engage in a relationship so wrong that they must keep it a secret forever. Not being able to share this with anybody, the relationship turns out to be much more harmful, than it would have been in an open and accepting society. The conclusion is that a sexual relationship between a therapist and a patient is damaging; but what seems to be most damaging is the consequences of the wrong and the deep secrecy making it impossible for both the patient and the therapist to talk about it with anybody and to seek supervision and help.

If the therapist in the above mentioned case had been open about his sexual problems in the first place, if not with anybody else then just with his wife, the situation could not have persisted for years and developed as it did. If he just could admit it to his own supervisor and therapist, the situation would not have gone completely out of control and he could have been helped to confront his own feelings and personal problems creating the emotional pull in order to take his projections back (30). If it was not a "deathly sin" leading to expulsion from the society of psychotherapists, the patient could have gone to another therapist for help, or she could have talked with her friends about it.

Case study two

A 30-year old student in holistic medicine fell in love with a mentally ill participant of the same age in a quality of life course and shared her experience and different thoughts with her supervisor. As a sexual relationship seemingly could not be avoided, she asked permission to sleep with him. The supervisor gave the permission, under the condition that she takes full responsibility for the impact of her actions. She slept with him and a month afterwards he entered an almost suicidal crisis. In the middle of the night she took her car and drove 300 km to assist him and help him through his crisis. She felt an extreme degree of empathy and responsibility and knew that she was in it with everything she has got. She stayed intimate and closely emotionally connected to him for about 100 intensive hours in a row during which she connected with her supervisor by phone. Finally she managed to get him to trust her and to receive the holding he needed for healing existentially. He now succeeded to integrate the strong life-pains that made him want to die. After this dramatic culmination of his old tendency to attempt suicide and his spontaneous regression to early childhood and poor mothering, it seemed that his mental and existential problems were to a large extent solved. She on her part took her projections back from him too, so her sexual desire was gone. In her next supervision session it looked more to her like an intense wish to help the young man, than it looked like a sexual intention in its own right. Giving her body will not be a part of her treatments, but here for some idiopathic reason this was inevitable. So they were in the end both set free by the episode, which from normal moral and medical-ethical standards would have been unacceptable. She also learned about the dramatic impact of a sexual relationship with a patient, and why she needs to be extremely careful with this kind of involvement in the future. Without wise guidance this relationship could have ended tragically.

Therapeutic behavior in clinical holistic medicine

According to the holistic process theory of healing, holistic and existential healing happens when the

patient encounters the repressed content of his or her unconscious. There are three steps in holistic healing: 1) feel, 2) understand and 3) let go (31). To facilitate healing, the therapist must support the patient, which is called "holding" (known as the "principle of resources") (32, Box 1).

BOX 1. CAM often use one or more of the five central, holistic principles of healing the whole person (from 31)

- (a) The principle of salutogenesis: the whole person must be healed (existential healing), not only a part of the person. This is done by recovering the sense of coherence, character and purpose of life of the person
 - (b) The similarity principle: only by reminding the patient (or his body, mind or soul) of what made him ill, can the patient be cured. The reason for this is that the earlier wound/trauma(s) live in the subconscious (or body-mind)
 - (c) The Hering's law of cure (Constantine Hering, 1800-1880): that you will get well in the opposite order of the way you got ill
 - (d) The principle of resources: only when you are getting the holding/care and support you did not get when you became ill, can you be healed from the old wound (2-4)
 - (e) The principle of using as little force as possible (*primum non nocere* or first do no harm), because since Hippocrates (460-377 BCE) statement "Declare the past, diagnose the present, foretell the future; practice these acts. As to diseases, make a habit of two things - to help, or at least to do no harm" (1), it has been paramount not to harm the patient or running a risk with the patient's life or health.
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At the same time the therapist must take the patient into painful emotions and gestalts - the traumas from early life - by exposing the patient to small doses of that originally made him ill (this is known as the "principle of similarity") (32-39). The latter therapeutic re-exposure to the evil is called "processing". As most of what gave us our traumas

originally was evil, the key to healing is really treating the patient “bad” with the good intention of healing them. This is what happens in the therapeutic processing.

So the skilful therapist treats the patient good and bad at the same time; holding takes love, devotion, acceptance, patience, acknowledgement, respect and so forth (23), while processing takes small doses of controlled violence, abuse, neglect etc. as is well known from the advanced toolbox of clinical holistic medicine (8) and intensive holistic therapy (40-43). The necessity of “evil” actions in holistic therapy calls urgently for an ethical tool that allows us to evaluate each therapeutic action regarding its ethical standing. Below we present three examples in need of ethical evaluation.

EXAMPLE ONE: A patient physically abused as a child

A patient was severely beaten as a child. According to the principle of similarity, the therapist must beat him again, or do something similar to provoke and process him. The therapist must take the patient back to his childhood traumatic violence and (after getting consent) once again beat him. This is what has been called “encounter” (44). During such a session, the therapist through role-play, invite the patient to go back in time, into re-experiencing being children beaten by his father (now the therapist) and to once again feel all the anger and fear that the beating made him feel, and little by little understand what the violent abuse and repression did to him as child. What it did do his personality - to allow him to let go of all his repressed hate and anger and in the end to embrace, understand his father, and forgive him. This is a most difficult therapeutic process, as any therapist will know.

Is this an ethical action? To answer this question, we can look at 1) the intent, 2) the way the exercise was done and 3) the outcome. We need to compare it to the three steps of healing: feel, understand and let go. Regarding the first: If it was done with a good intent – to heal – then we believe it was ethical. Concerning the second: If it was done in an empathic and balanced way, helpful to the patient, facilitating the recall of old feelings and emotions, facilitating

reflection and understanding, and facilitating forgiveness and letting go of negative beliefs and learning from the childhood violent abuse, then it was ethical in our opinion. Regarding the last: If it helped the patient to heal and forgive, it was ethical as we understand it – if it healed, or supported healing, because it provoked emotion, understanding and letting go, it was ethical. If the patient learned from it and gained understanding and self-insight it was ethical in our opinion.

The “rule of integrative ethics”

It is always difficult to balance these three factors: Intent, outcome and quality of action. The “rule of integrative ethics” is that if two or three out of these three ethical dimensions were fine, then the action was all together ethical in our opinion. Imagine that the exercise was well performed, and everything in principle went well, but the patient was not helped. We would not blame the therapist in that situation. Imagine that the therapist failed to do the therapy empathically, but that it was done in the best of intentions, and that it really helped the patient. Again, we would not blame the therapist. Imagine that the intent was not good, but selfish, as the therapist himself had been beaten as a child, and needed to do this exercise for his own sake; if it was done emphatically and skilfully, and if it really helped the patient, we would not accuse him for being a bad therapist – but of course we would still give him critique and encourage him to take the therapy he needs himself.

But, if this was done with a selfish intent, and it did not help the patient, we would reject it as unethically therapy. If it was done in the best of intentions, but performed badly, so it did not help the patient, we would say, that it was not good therapy. If the intention was evil, and the act cruel and it really did help the patient, we would still blame the therapist for not giving good and ethical therapy.

EXAMPLE 2: A cancer patient in existential trouble

Now let's take a little more difficult example. A cancer patient wants to live, but feels that she is losing herself – her hair, her body tissues, her dignity, wearing a ridiculous wig. The therapist wants to encourage her to be what she is, and love just that, and in this intent he makes a role play with her where he puts her wig in the office's paper-bin (it does not destroy the wig, as the bin is clean and empty). After this she feels courageous enough to be bald and she does not wear the wig anymore. Was that ethical?

It was done in a good intent. It was – at least according to the moral of society - a violation of her integrity and the outcome was good. As two out of three of these ethical dimensions were positive, the action was all in all ethically acceptable and good in our opinion.

EXAMPLE 3: Holistic sexology: Healing a sexually abused woman using "acceptance through touch"

Sexual dysfunctions often come from lack of self-acceptance. A traditional cure for this is therapeutic touch especially if the therapist is able to signify acceptance by the touch, a technique known as "acceptance through touch" (1,8,45). Around the year 1900 therapeutic touch was often practiced as a swift kiss, but due to moral reflections this practice has now become rare. Let us use such a controversial practice as the next example.

A holistic therapist works on a severely sexually abused 21-year old woman. The therapist feels that just touching the patient by hand is not enough to heal her, and chooses therefore, after getting her consent for this action, to gently kiss her *mons pubis* (over the pubic hair and the pubic bone, at one of the acupressure points related to sexuality known as "Conception Vessel 4" in Chinese medicine (46)). The intention is to let her know that her body and genitals are completely lovely, acceptable and fine for him or indeed taking her father's place psychodynamically.

The rationale for this action is clear: a kiss is maybe the most powerful bodily sign of acceptance,

and the genital kiss is a well-known sexological procedure developed by van der Velde around 1900 as an exercise for couples (47). The genital kiss was a non-sexual interaction intended for lovers; it allowed a man to heal his women for sexual frigidity. Brecher wrote in 1969: "The genital kiss, van der Velde adds, "is particularly calculated to overcome frigidity and fear in hitherto inexperienced women who have had no erotic practice, and are as yet scarcely capable of specific sexual desire". In the example the procedure of the genital kiss seemingly did the job and helped the woman to acceptance of own body and sexuality. After the therapy she is able to enter a happy sexual relationship for the first time in her life.

Was this action ethical? Let's analyse according to the "rule of integrative ethics":

- (a) It was done in the best of intentions.
- (b) It was not sex and therefore not in conflict with the ethics of Hippocrates (but as it was close to the vulva it was still in conflict with the moral of society).
- (c) The woman was helped but it is difficult to say if it was this kiss that healed her.

The score are as follows: a) It was done with a good intention; b) the action was not sex so it was ethical according to medical ethics but at the same time not morally acceptable by society, c) the outcome was good. All in all this is therefore still an ethical act.

Discussion

This kind of "doubtful" actions as shown in example three has been quite normal in the classical holistic therapy of Asia, guided by the principle often called "holy madness" or "crazy wisdom" (48,49). Holy madness is today often used in advanced holistic therapy and at advanced courses in self-knowledge and personal development.

With a traditional duty-ethic many actions performed in the state of "holy madness" must be rejected as unethical, but in the light of a complex, integrated ethics, many of the actions become also ethically acceptable. They are actually very helpful for learning and personal development, because they

turn reality up-side-down and force the students to think and reflect.

It must be admitted, that according to the integrative ethics, sex with a patient, if done with a good intent, and with a good outcome, is in principle ethical, in spite of validating the famous ethical rule of Hippocrates of not having sex with your patient. In spite of this, modern holistic therapists agrees, that this rule is so important, that even the best of intentions and the best of outcomes cannot allow for a dispensation from it. Therefore, we strongly advise that the “*rule of integrative ethics*” is not used to justify sex with the patient. The suspicion, that the therapist did it for himself, and not for his patient, will always be there, making the action unethical.

Conclusions

An integral ethical theory can integrate the three ethical core dimensions: 1) intent, 2) outcome and 3) the quality of the act, well known from a) the duty ethics, b) the utilitarian ethics and c) the feministic ethics. This theory makes it possible to give a complex evaluation of the ethics of a complex holistic medical or sexological treatment. We have introduced a new “*rule of integrative ethics*” that allows us to evaluate the medical ethics of complex therapeutic behaviour, even if such a behaviour be judged as immoral by society in general. This ethics is useful for clinical holistic medicine, especially to ethically evaluate the concrete therapeutic actions in advanced holistic medical and sexological treatment. An integrative medical ethic is useful for teaching ethics to holistic therapists and physicians and for training students in holistic medicine.

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Clinical medicine and psychodynamic psychotherapy: Evaluation of the patient before intervention

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Abstract

Clinical medicine has been defined as "the study and practice of medicine by direct examination of the patient." This approach to medicine is appropriate whenever the patient's problem or disease is caused by repressed material contained in the patient's unconscious. According to psychoanalysis, body-psychotherapy and clinical holistic medicine most mental and physical illnesses are caused by informational disturbances in the bodies tissues likely to be a direct consequence of repressed emotions, feeling and thoughts from traumas earlier in life. This is the most logical explanation why the rehabilitation of the sense of coherence seems to induce healing of both physical and mental diseases. If it is unconscious material that causes the patient's disorders the patient will not be helped by a precise anamnesis and an accurate diagnosis; the only thing that can cure is the unconscious material being integrating in the patient's consciousness. If a chronic patient with a long history in biomedicine has not been helped, in spite of many biomedical doctors using their best efforts on this, the likely cause of the patient's illness or disease is in the unconscious.

In this case there is no reason to spend much time on anamnesis and diagnosis of the patient; the right thing to do is to start the exploration of the patient's inner, unconscious life together with the patient right away. This strategy leads to the most cost-efficient use of time, and often to the healing of the patients experienced health-problems in only 20 sessions.

Many disorders can be treated effectively and without adverse effects/side effects with clinical medicine (NNT=1-3 and NNH>1000), which should be compared to NNT=5-20 and NNH=1-4 for most drugs.

Keywords: Clinical medicine, sexology, psychodynamic psychotherapy, CAM, physiotherapy, body-psychotherapy, mind-body-medicine, clinical holistic medicine, holistic health, human development, research, quality assurance, NNT, NNH.

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Introduction

The concept of “clinical medicine” has two meanings; the one is the well-known and science of practical medicine and another is much more traditional, well expressed by “BioMedExperts.Com” (1): “Clinical medicine: The study and practice of medicine by direct examination of the patient.”

Before physicians had drugs – from around 1900 and all the way back to the old Greek physicians in the line of Hippocrates (2) medical treatment was about examination the patient and shedding light, consciousness and understanding on the human problems. In this process of common exploration of the patient, where the patient little by little understood what was wrong and what needed to be corrected in life, the patient was healed (or died). The disease process could be of one of two types, disease caused by external causes (epidemics were well known even in Hippocrates time (2), and by internal causes. The internal causes were seen as caused by either divine influence or of lack of self-knowledge at that time. Devine influence was harder to deal with, but the exploration into self and the unconscious seem to be an integrated part of the practice that later was labeled “character medicine”.

Character medicine was about balancing the four symbolic elements of water, fire, earth and air, in the person’s character. The Greek medical system was holistic, and could best be translated into something like “energy healing” or “consciousness-based medicine”. The tools for the combined examination-treatment was talking and touching; therapeutic touch in the form of massage and acupressure seems to be the normal treatment of a long series of problems likely to be caused by “inter courses”.

Freud and psychoanalysis

First with Sigmund Freud (1856-1939) and the psychoanalysts of the 20th century the concept of “the unconscious” was developed. The unconscious was always feelings/emotions and thoughts linked to personal history and especially painful and overwhelming moments called traumas or “gestalts”. Freud, Reich, Jung, Lowen Rosen, Anand (3-9) and other psychoanalysts and body-psychotherapists

focused on sexual traumas as these traumas seemed to hold on to the most intense feelings that needed to be integrated by the patient, in order to heal physical and mental illnesses. The successful healing of a long number of mental illnesses including schizophrenia (10) led to the conviction that all mental illness were caused by unconscious material – traumas with repressed sexuality. Wilhelm Reich (1897-1957), another therapist like the many from the contemporary schools of body-psychotherapy came to believe that even cancer and coronary heart disease were caused by repressed emotions and sexuality, and still today we have physicians like Dean Ornish who cure heart patients by learning his patients intimacy, and thus “opening their hearts physically, emotionally, and spiritually” (11,12). In New York psychoanalysts seemingly has good results with treating cancer patient in much the same way (13,14), and in Germany complementary therapists are going the same way with their patients (15). The understanding of holistic healing has recently been clearer after the work and development of “salutogenesis” by Aaron Antonovsky (1923-1994) (16,17).

Exploring the unconscious with the patient

To cure a patient from a problem caused by traumatic content in the patient’s subconscious is in principle easy: Just explore the unconscious together with the patient, help him or her to confront the difficult emotions and feeling, and integrate all that happened in the consciousness. This is the strategy of psychoanalysis, where free associations have been the major tool. This has also been the strategy in Reichian bodywork and body-psychotherapy. It was also, as mentioned above the core of the therapy of the old, holistic physicians working with conversation and touch therapy to develop the patient’s self-insight and character.

Interestingly, the process of healing in “clinical medicine” – exploring the patient together with the patient in the intent to cure – are almost opposite the process of today’s biomedicine, where anamnesis, testing and examination leads to diagnosis, and first after that the establishment of the right drug, surgery

or other (mechanical or chemical) intervention for treatment. In biomedicine the accuracy of the anamnesis and diagnosis is essential to competent treatment. In clinical medicine, the anamnesis and diagnosis, is only of importance if the physician is in doubt of the cause of the disease. If the cause is external – bacteria as in syphilis for example – it has little meaning to work on the patient's unconscious, but as soon as the cause is established as internal, based in the patient's subconscious, there is no more need for anamnesis and diagnosis. All energy must now be focused on the process of healing, by shedding light into the patient's unconscious.

If the patient is a chronic patient, who already has been to a number of well-trained biomedical physicians there is no reason to suspect that the reason is external, because that would have been discovered already. In this situation, the treatment should start right away by taking the patient onto the journey of exploring the patient's inner life.

The efficacy of clinical medicine

Clinical medicine has been documented highly effective in physiotherapy (18-23), psychodynamic psychotherapy (24-26), sexology (27-30), and CAM, i.e. clinical holistic medicine (31-38). Number Needed to Treat has normally been about $NNT=2$, and Number Needed to treat to Harm has been shown to be $NNH>1000$ or more (39,40). Heart diseases and cancer has been rather successfully treated ($NNT=3-7$), and even some cases of schizophrenia seem to respond well ($NNT=3$) (10). In comparison to this most drugs has a $NNT=5-20$ (41) and a $NNH=2-4$ (compare i.e. the statistics for the antipsychotic drugs (42)).

In spite of the large success for therapists using clinical medicine to help their patients with physical, mental, existential, sexual health problems and dysfunctions, there has been little interest in research and development of this kind of medicine by universities and government institutions. The pharmaceutical industry has no natural interest in this kind of medicine, and the large industrial lobby might be one of the reasons for the almost complete lack of interest in this field until recently. We strongly suggest that medical research institutions and

universities start taking clinical medicine seriously. With the non-drug medical tools of psychotherapy, sexology and CAM many of the health problems that torment today's citizen could be alleviated. In states with nationalized medicine it is time to consider the more efficient and less harmful clinical medicine in our opinion.

A practical solution for research and quality assurance

Instead of using much time on anamnesis and diagnosing we recommend the patient should fill out a short questionnaire like QOL5 (43) or QOL 10 (44) to measure:

- Self-rated physical health
- Self-rated mental health
- Self-rated sexual functioning
- Self-rated self-esteem
- Self-rated I-strength
- Self-rated relation to partner
- Self-rated relation to friends
- Self-rated social ability
- Self-rated working/studying ability

To establish that one or more of these dimensions are low is sufficient to justify the immediate onset of the treatment with an appropriate clinical medical tool (45), a sexological tool (46), or a psychoanalytical tool (47,48) for healing mental disorders or personality disturbances.

If the therapist measure the patient before and after the treatment, and again after one year – i.e. following the square curve paradigm – it is easy to see if a patient was helped and make the statistics over the efficacy of the clinical work in relation to the different health problems (compare how we did it for Research Clinic for Holistic Medicine and Sexology (32-39)). The one-year follow up is important to document that the results are stable through time (38).

Conclusions

In general clinical holistic medicine helps chronic patients cure physical, mental, existential and sexual

illnesses and dysfunctions that primarily are caused by repressed thoughts and emotions in the patient's unconscious. Often the patient has tried to be helped by biomedical drugs without success. If a patient has a chronic condition that has not been cured with biomedicine there is no reason to spend time once again making a thorough anamnesis and give an accurate diagnoses; a rough categorization into the categories of feeling physically ill, mentally ill, sexually dysfunction etc. by a short questionnaire is sufficient for documenting the patient's progress.

In general the anamnesis and diagnosis has little therapeutic value in clinical holistic medicine, as all patients in principle are treated the same way, to rehabilitate their existence, improve their sense of coherence, and improve health, quality of life, and ability in general – the sexual, social, working, studying ability etc. We recommend that all patients fill out a short questionnaire on self-assessed physical and mental health, quality of life, and ability, like the QOL5 (43) or QOL 10 (44). The patients and the physicians and time, money and other resources should be used wisely and focused on healing that happens when the physician and the patient together explore the patient's inner life to re-integrate repressed feelings. Using too much time on taking the patient's life-story and on giving the patient specific, biomedical diagnoses, that are only useful when you are treating with drugs is wasting time and money in clinical holistic medicine and holistic sexology and might therefore be considered a principal error.

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Original Articles

Clinical holistic medicine: Holistic sexology and female quality of life

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Abstract

In this study we are testing the quantitative effect of holistic sexology on female patient global quality of life (QOL), sexual functioning, health and ability. The patients had sexual problems related to desire, genital pain, and orgasmic dysfunction. We found that holistic sexology clinically significant helped the patients to improve self-rated quality of life, self-rated sexual function, self-rated mental health with self-rated physical health often also improved. Self-esteem, ego-strength and social ability were also often improved. 43 patients with lack of sexual desire, 16 patients with genital pain including primary vulvodynia and dyspareunia, and 24 patients with orgasmic dysfunction including anorgasmia was included in the protocol, together with 33 patients with a wide range of sexual problems like vaginismus, sexual arousal syndrome, and sexual aversion disorder. The patients were between 18 and 70 years old. The different groups underwent 20 hours of holistic sexological therapy, which started with conversational therapy, and if this did not help was complemented with bodywork, and if this did not help, complemented with genital physiotherapy as modum Hippocrates (vaginal acupressure). All dimensions were improved 15-50% (0.75 to 2.0 steps) as measured on a five point Likert Scale with the validated questionnaires QOL1 and QOL5, complemented with questions on sexual, social and working ability and ego-strength. The global simultaneous improvement of all dimensions related to health, quality of life and ability strongly indicated that the holistic sexological treatment induced not only sexual healing, but also Antonovsky-salutogenesis (existential healing).

Keywords: Quality of life, sexology, ethics, existential psychology, sexual dysfunction, integrative medicine, holistic health.

Introduction

In sexology there are several concerns involving the female, such as lack of sexual desire, genital pain including dyspareunia and orgasmic dysfunction

including anorgasmia (1). 56.6% of Danish women about 30 years old doubt that they are sexually attractive and only 27.4% of Danish women feel satisfied sexually (2), indicating that in spite of much more sexual freedom in that country, there is still much that could be better in the sexological area.

Classical holistic medicine goes all the way back to Hippocrates and his students (3). According to “Corpus Hippocraticum” (3) these early physicians cured psychosexual developmental problems with a combination of conversational therapy, bodywork and when necessary also genital physiotherapy today often called “physical therapy for the pelvic floor” (4). The later treatment has been used today to a cure many female health problems including sexual dysfunctions, with about 50 RCTs to support its efficiency, although “the sexological examination” is recommended by Bø et al, if the treatment of sexual dysfunctions with physiotherapy alone fails (4).

During the last ten years our international research team has made a number of theoretical and clinical sexological studies (5-16), including some studies complemented with genital physiotherapy (17,18) and clinical studies in the effect of holistic therapy complemented with bodywork in general (19-22). For ethical and political reasons we have not used sexual stimulation (the sexological examination) (23-29) in our studies, but we evaluated the patients of a sexologist using a similar method in Denmark for anorgasmic women (30).

There seem to be an emerging agreement about sexological researchers that sexual dysfunction often needs more than psychotherapy. A review concluded that manual sexology is superior to psychotherapy (31). We found that holistic sexology combining psychotherapy and bodywork could help 42% of patients, who experienced sexual dysfunction (16) and the ratio of patients helped went up to 56%, if genital physiotherapy ad modum Hippocrates was also given (18). If direct sexual stimulation was used, 93% of the patients were healed (30).

A simple way to understand the increased effect with the more provocative therapeutic tools is to acknowledge Wilhelm Reich (1897-1957) and his brilliant insight, that the more directly the patients emotional resistance is addressed in therapy, the more efficient the therapy (32-34). Working directly on the genitals are provoking much more resistance than just

talking and massaging the body; direct sexual stimulation is likely to be the most provocative procedure at all in the sexological field, going straight to the patients most intimate problems. From this perspective it is not at all surprising that vaginal physiotherapy and manual sexology is highly efficient in treating sexual dysfunctions.

The present study is testing a hypothesis that holistic sexology induce Antonovsky salutogenesis and thus improving not only sexual functioning, but also physical and mental health including quality of life in general.

Theory behind

The psychoanalytical and psychodynamic theories by Freud, Jung and Reich are the basis of modern sexological treatment with conversational therapy (33,35,36). Sexological research has pointed towards the musculature of the circumvaginal/pelvic floor musculature (37-40) as important for many different sexual problems. Modern vaginal physiotherapy for sexual dysfunctions concentrate often on the bulbospongiosus, ischiocavernosus and the most medical fibers for the levator ani muscles as stated in a textbook (4, page 310) with the following statement: “All these findings have interesting implications for physiotherapists giving pelvic floor re-education treatments; it could be that anorgasmic women would be helped by improving the strength of their pelvic floor muscles.” The lack of effect of conversational therapy alone has meant that vaginal massage and similar techniques are becoming more and more used by educated and modern female patients that insist on having a normal sex-life: “Increasingly physiotherapists are being asked to treat patients... complaining of dyspareunia” (4, page 312). “Physiotherapists are finding that they are able to treat many such patients very successfully using a combination of “tender loving care”, listening, counseling, education, ultrasound to soften scar tissues and the teaching of self-massage and pelvic floor exercises. No scientific evaluation of these techniques has so far been undertaken, but the gratitude of patients and their partners is significant” (4, page 312). Confrontation of the genitals is often making miracles for the patients in this area, and

Polden and Mantle found that techniques like “guidance to self-examination using a mirror is often all that is needed” (4, page 312).

So sexual problems seem often to be caused by emotional problems associated with the genitals and as soon as they are solved, the patient’s level of sexual ability is often normalised. The basic method of holistic sexological therapy is therefore to work with the patient’s resistance (32-34) until all negative feelings and emotions connected to gender, sexuality and sexual organs are integrated and the patient is sexually and existentially healed.

Psychodynamically the sexually dysfunctional patients very often have strong unresolved Oedipus complexes (41) and a pronounced level of sexual masochism (34). During the process of sexual healing the patient will often have sexual transference of masochistic quality that gradually transforms into sadism, before the patient is finally healed. The therapist is well advised to take all possible precautions as the patient’s often-unconscious, sexual sadism can take any form. If the issue of sexual sadism are addressed in the therapy, before it actually appears, many problems can be avoided. Sexual sadism might be too difficult for the patient to contain, forcing her to discontinue the therapy, if this is not done elegantly.

Methods

The present retrospective, clinical study presents the results of holistic sexology on sexual functioning, physical and mental health and quality of life of more than 100 self-referred patients treated in the period from 2003-2005 at the Research Clinic for Holistic Medicine in Copenhagen. All patients presented, according to their medical record, with a sexual problem that clinically judged by the physician, who treated them related not to a physical problem like an infection, but to a psychosomatic problem. At the evaluation at our clinic the problem was hypothesised (in accordance with psychodynamic theory) to relate to a disturbance of their childhood psychosexual development.

The therapy was a combination of psychodynamically oriented clinical holistic short-term therapy and holistic sexology, given in such a

way that problems that could be solved with conversational therapy alone were solved this way; then bodywork was added, and if the patients were not cured then vaginal physiotherapy added, in a project where the classical method of Hippocratic Pelvic Massage (also called “vaginal acupressure” or “genital physiotherapy” (4)) was used. Direct sexual stimulation and the “sexological examination” (21-23) were not used in this study.

The fundamental therapeutic work was character analysis (3,33,34) and self-exploration in accordance with the life-mission theory (42-49). The bodywork was inspired by Hippocrates, Reich, Lowen and Rosen (3,32-34,50,51). The patients were given 20 sessions (mean) during one year.

All patients were measured before and after the intervention with the validated questionnaires QOL1 and QOL5 (52) complemented with four questions on social, sexual and working ability and ego-strength (the battery of questions was all together called QOL10) (53). All data were collected using a five-point Likert Scale, which seems to be most efficient and reliable for psychometric testing (54).

The therapists were holistic therapists from the Nordic School of Holistic Medicine under supervision in order to understand and use the healing methods of Hippocrates (see (55-61)). The patients were diagnosed by a physician using a list of diagnoses and comparing these to the symptoms, which the patients described. The patient’s global, self-assessed sexual ability was also measured as guidance for the therapist giving the diagnosis. Only chronic patients, who had had their problem for more than one year, were included in the study.

Results

43 patients entered the protocol with problems related to sexual desire, 16 patients had genital pain including primary vulvodynia and dyspareunia and 24 patients had orgasmic dysfunction including anorgasmia (see table 1). 33 patients had a wide range of other sexual problems like vaginismus, nymphomania, sexual aversion disorder, chronic arousal syndrome etc..

Table 1. The impact on health quality of life and ability of *holistic sexology* on patients with problems related to desire, genital pain, and orgasmic dysfunction. Scores are mean scores on the 5-step Likert scale. N the number of participants in the study presenting this problem. (* : improvement is significant, p=0.05; **: improvement is significant p=0.01)

		Physical health (self-rated)				Mental health (self-rated)				Self-esteem (self-rated)				Relation to friends (self-rated)			
		Before	After	Δ	p	Before	After	Δ	p	Before	After	Δ	p	Before	After	Δ	p
Desire	Score	2.7	2.33	0.37	.019	3.65	2.42	1.23	.000	3.28	2.41	0.87	.000	2.61	2.18	0.43	.011
	N	43	33	10	*	43	33	10	**	43	34	9	**	43	34	9	**
Genital pain	Score	3.0	2.4	0.6	.096	3.25	2.4	0.85	.054	3.19	2.2	0.99	.032	2.0	1.5	0.5	.269
	N	16	10	6		16	10	6	*	16	10	6	*	16	10	6	
Orgasmic dysfunction	Score	2.75	2.35	0.4	.016	3.17	2.29	0.88	.000	3.04	2.39	0.65	.006	2.0	1.89	0.11	.816
	N	24	17	7	*	24	17	7	**	24	18	6	**	24	18	6	
Other sexual problems	Score	2.76	2.21	0.55	.110	3.55	2.63	0.92	.002	3.24	2.36	0.88	.001	2.61	2.04	0.57	.012
	N	33	24	9		33	24	9	**	33	24	9	**	33	24	9	*

		Relation to partner (self-rated)				Ego strength (self-rated)				Sexual ability (self-rated)			
		Before	After	Δ	p	Before	After	Δ	p	Before	After	Δ	p
Desire	Score	5.0	3.88	1.12	.016	3.36	2.5	0.86	.001	3.35	2.71	0.64	.014
	N	43	34	9	*	42	34	8	**	43	34	9	*
Genital pain	Score	4.3	2.9	1.4	.146	3.31	1.9	1.41	.011	3.94	3	0.94	.004
	N	16	10	6		16	10	6	*	16	10	6	**
Orgasmic dysfunction	Score	4.0	3.11	0.89	.101	3.0	2.44	0.56	.083	3.21	2.78	0.43	.110
	N	24	18	6		24	18	6		24	18	6	
Other sexual problems	Score	4.72	3.46	1.26	.083	3.39	2.29	1.1	.002	3.46	2.67	0.79	.029
	N	32	24	8		33	24	9	**	33	24	9	*

		Social ability (self-rated)				Working ability (self-rated)				Quality of life (QOL1) (self-rated)			
		Before	After	Δ	p	Before	After	Δ	p	Before	After	Δ	p
Desire	Score	2.79	2.18	0.61	.002	3.09	2.53	0.56	.025	3.44	2.32	1.12	.000
	N	43	34	9	**	43	34	9	*	43	34	9	**
Genital pain	Score	2.63	1.8	0.83	.025	3.38	2.4	0.98	.037	3.31	2.3	1.01	.029
	N	16	10	6	*	16	10	6	*	16	10	6	*
Orgasmic dysfunction	Score	2.42	2.17	0.25	.381	3.0	2.67	0.33	.427	3.46	2.61	0.85	.000
	N	24	18	6		24	18	6		24	18	6	**
Other sexual problems	Score	3.06	2.29	0.77	.001	3.06	2.46	0.6	.134	3.36	2.33	1.03	.001
	N	33	24	9	**	33	24	9		33	24	9	**

As there were few of each type of patients these were analysed statistically as one group. All dimensions were improved 15-50% (0.75 to 2.0 steps) as measured on a five point Likert Scale with the validated questionnaires QOL1 and QOL5, complemented with questions on sexual, social and working ability and ego-strength.

We found that patients with problems related to sexual desire responded well to holistic sexology. The group increased 0.64 steps of four theoretically possible steps on the Likert scale, which is a remarkably large, significant improvement ($p=0.01$). This group also significantly improved their physical and mental health and global quality of life (0.37, 1.23 and 1.12 step respectively). The contemporary improvement both health, quality of life, and ability strongly indicates that Antonovsky-salutogenesis (62,63) – also called “existential healing” – is induced during the holistic treatment of lack of sexual desire.

We found that patients with problems related to genital pain also responded well to holistic sexological treatment; the group increased 0.94 steps of four theoretically possible steps on the Likert scale, which is a remarkably large, significant improvement ($p=0.01$). This group also significantly improved their mental health, and global quality of life (0.85 and 1.01 step respectively). The contemporary improvement both health, quality of life, and ability strongly indicates that Antonovsky-salutogenesis – also called “existential healing” – is induced during the holistic treatment of genital pain.

We found that patients with problems related to orgasmic dysfunction also responded less well to holistic sexological treatment; the group did not increase sexual ability significantly although the tendency was found and the result could be significant with more participants in the study (the increase were 0.43 step and $p=0.1$). In spite of this, this group did significantly improve their physical and mental health, and their global quality of life (0.40, 0.88 and 0.85 step respectively). The improvement both health and quality of life indicates that Antonovsky-salutogenesis is also induced during the holistic treatment of orgasmic dysfunction; but more modest compared to the two groups described above.

For the last group of patients with miscellaneous sexual problems we found that this group responded well to holistic sexological treatment; the group

increased its sexual ability significantly 0.79 step ($p=0.03$). This group did not significantly improve physical health, but mental health, and global quality of life was significantly improved (0.92 and 1.03 step respectively, with $p=0.01$ and 0.01). The improvement of sexual ability, health and quality of life indicates that Antonovsky-salutogenesis is also induced during the holistic treatment of this group.

Self-rated self-esteem, ego-strength and social ability was also measured and the patients state where often improved in these important dimensions also (see table 1).

We did not find any adverse effects and no serious negative events like suicide attempts, reactive psychosis or mental hospitalisation during this study.

Ethical aspects

The most important ethical safeguards that were in place to protect the participants and therapist were the following:

- Full and complete written and oral information, including graphic illustration of the content of the therapy.
- Time to reflect about participation from informational session to the practical work.
- Everything was done under supervision; the therapists had individual supervision and they participated in a Balint group.
- The therapy followed the ethical guidelines of International Society for Holistic Health (ISHH) for holistic practitioners (64).
- Careful follow up with questionnaires about adverse effects and therapeutic outcome (qualitative and quantitative assessment and evaluation of the therapy).
- The research team has evaluated the process that is in place in the treatment organization to assure that the treatment was done according to the described methods and ISHH ethical standards.

Manual sexological therapy must be performed according to the highest ethical standards (17,18). The holistic sexological procedures are derived from the holistic existential therapy, which involves re-

parenting, massage and bodywork, conversational therapy, philosophical training, healing of existence during spontaneous regression to painful life events (gestalts) and close intimacy without any sexual involvement. In psychology, psychiatry and existential psychotherapy touch is often allowed, but a sufficient distance between therapist and client must always be kept, all clothes kept on and it is even recommended, that the first name is not taken into use to keep the relationship as formal and correct as possible. The reason for this distance is to create a safety zone that removes the danger of psychotherapy leading to sexual involvement.

The female patients in holistic existential therapy and holistic sexology with life-long anorgasmia often find their situation pretty hopeless; many of them have been dysfunctional and incurable for many years or they suffer from conditions for which there has been no efficient biomedical or psychotherapeutically cure. They suffer from a condition that is a serious burden to their marital life, if they have a husband or often the problem makes them unable to find or keep a partner (65). Often the problem of anorgasmia is caused by traumas from earlier sexual abuse, which needs more effective and direct tools for the induction of healing (salutogenesis).

The primary purpose of the holistic existential therapy is to improve quality of life, secondary to improve health and ability. The severe conditions of the patients and the chronicity is what ethically justify the much more direct, intimate and intense method of holistic manual sexological therapy, which integrates many different therapeutic elements and works on many levels of the patient's body, mind, existence and personality at the same time. Holistic sexology is holistic existential therapy taken into the domain of sexology. The general ethical rule is that everything that does not harm and in the end will help the patient is allowed ("first, do no harm"), but we understand that this procedure is not accepted in many other countries due to sexual taboo and legal regulations.

It is though interesting that the sexological techniques have been used for centuries by physicians and for decades in Denmark also by alternative therapists outside the medical profession (17,18). An important aspect of the therapy is that the physician must be creative and in practice invent a new treatment for every patient. To use sexological

techniques involving direct genital contact, the holistic sexologist must be able to control not only his/her behaviour and most strictly avoid the danger of acting out the therapeutic session turning into mutual, sexual activity. The necessary level of mastery of this art can only be obtained through training, supervision and a third person present. The role of the sexologist is parentally accepting, generous and supporting, loving and therapeutic.

In this, study about 100 female patients with often-lifelong sexual problems received holistic sexological treatment and one in two of the patients solved their problem (16,18), but more importantly their whole life seemed to improve due to salutogenesis, or existential healing.

Discussion

Orgasmic dysfunction was the only sexual problem that holistic sexology did not significantly improve, in spite of the patients becoming better physically, mentally, and existentially. It might be that treating anorgasmia takes more than 20 sessions; it is also very likely that the larger sexological tools like direct sexual stimulation and the sexological examination (23-29) must be used to cure these patients, that seems to be more blocked and "neurotic" than the other groups of patients.

It is important to notice that sexological therapy always has been holistic; the development of holistic sexology and the manual sexological tools has seemingly improved the efficacy of the sexological treatment, but from the very beginning sexological treatment has been able to help at least one in two of the patients with problems related to desire, genital pain and orgasmic dysfunction, as the statistics of Masters and Johnson showed already in the 1960s (65).

The primary reason for the improvement of sexological therapy's impact on general health, quality of life, and ability seems to be the implementation of a better understanding of the process of salutogenesis, or existential healing (62,63). The data presented here seems to support this hypothesis of "applied salutogenesis".

All in all holistic sexology seems efficient for many types of sexual dysfunctions and genital pain.

Not only sexuality, but also mental health and quality of life are also improved and often physical health also. This is a strong indication that holistic sexology can induce existential healing, or Antonovskysalutogenesis. 20 sessions of therapy might be too little to help the female patients with the most severe sexual problems like anorgasmia.

Holistic sexology does not have any known side effects, and seems to be a fast and efficient way to cure most of the sexual dysfunctions of the female patients.

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Acupuncture for patients with cerebral apoplexy: A multicenter randomized controlled trial

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Abstract

XingNao KaiQiao (XNKQ) acupuncture is widely used to prevent cerebral apoplexy, but the available evidence of its benefit is scarce. Objective: To investigate the effectiveness of XNKQ acupuncture in patients with cerebral apoplexy. Method: Two-group, randomized, controlled trial (June 2005-December 2007). Approximately 600 patients, stratified randomized, involving 234 patients with recovery stage (16-180d), 234 patients (64% males), mean (SD) age of 61.5 (\pm 8.87) years with cerebral apoplexy, based on International Stroke Society criteria. Patients were treated at four centers in Tianjin China. Interventions: XNKQ and conventional acupuncture. XNKQ group involving 116 patients who were administered XNKQ acupuncture that consisted of one time per day for four weeks. Conventional group involving 118 patients, who were administered conventional acupuncture. Main Outcome Measures: Follow-up for six months. Nerves functional assessment were evaluated in the patients after treatments. Results: Between baseline in two groups are comparability ($P>0.05$), nerve functional assessment in XNKQ were more effective than in conventional group (NIHSS: RR 1.19, 95% CI 1.06~1.33; $P=0.004$; SSS: $F=11.50$, $P=0.001$; CSS: $X^2=12.47$, $P=0.00$; BI: $X^2=4.19$, $P=0.04$). Conclusion: XNKQ acupuncture was more effective than conventional acupuncture in improving nerves functional in patients with cerebral apoplexy.

Keywords: Integrative medicine, holistic health, Chinese medicine, acupuncture, cerebral apoplexy.

Introduction

Cerebral apoplexy is the third leading cause of death in the world. It greatly endangers the public health with its high incidence, high disability rate, high recurrence and high mortality. In addition, there are more cerebral infarction patients than cerebral hemorrhage patients. So far there is still no specific drug for cerebral infarction. Though there are

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comprehensive therapies from stroke unit and thrombolytic drugs such as aspirin and rt-PA (recombinant tissue plasminogen activator) can also be adopted (1), however these drugs are limited by the time. Acupuncture showed great prospect in treating with this disease.

XNKQ acupuncture method (2) was created by professor Xue-Min Shi in number 1 hospital attached to the Tianjin University of Traditional Chinese Medicine for apoplexy. It showed great effects on treating 9,005 in-patients with apoplexy (3) (including 3,077 cerebral hemorrhage cases and 5,928 cerebral infarction cases). In this paper we will present the results of XNKQ acupuncture performed in a multi-center, randomized controlled trial.

Methods

The multi-center, randomized controlled and blind clinical trials were adopted in this study. Analysis of cerebral apoplexy diaries and appraisers were performed by blinded evaluators. The study duration per patient was 28 weeks, four weeks of treatment and 24 weeks follow-up. Patients meeting the inclusion criteria were randomly stratified. A centralized telephone randomization procedure was used in grouping patients and almost one to one ratio in XNKQ and conventional group. According to other reports of this kind, when $\alpha=0.05$ and $\beta=0.1$, 230 cases in recovery stage are needed with a drop rate of 15%. We increased the number of samples to 234.

In this study, the procedure was performed by SAS software and the random code arranged according to patient admission sequence. The randomized distribution project was sealed into an envelope with sequence number. This trial was approved by the Institutional Review Board and informed consent.

Patients

In-patients or outpatients were selected as study sample from four hospitals (number 1 and 2 hospitals of Tianjin University of Traditional Chinese Medicine, Tianjin, Tianjin Municipal TCM Hospital and the hospital attached to Medical College of

People's Armed Police). Those who were consistent with the inclusive criteria were included in this study: age from 40 to 75 years old and 16 days to 6 months after stroke; confirmation as recovery stage of cerebral infarction through cranial CT or MRI according to the Diagnostic Keys for Various Cerebrovascular Diseases (4) stipulated in the Second All-China Academic Conference on Cerebrovascular Disease organized by Chinese Medical Association; conformity to the criteria stipulated by the Emergency Team organized by the State Administration of Traditional Chinese Medicine on the basis of pattern identification (5) and those who signed the informed consent.

Those were excluded: more than 4 grade muscle strength of the affected side upper and lower limb; difficult to follow-up; and with infection on the acupuncture points or skin around the points. Rejecting criteria: not treated according to the standard or poor compliance; severe adverse reactions couldn't continue the treatment; and those with severe complications or deteriorating conditions that need emergent measures.

Interventions

Both patients in XNKQ and conventional acupuncture were treated with basic therapies including degrade fibrosis, anti-platelet and symptom-oriented management.

The patients grouped into XNKQ were treated with acupuncture method using XNKQ. The filiform needles (40mm~75 mm in length and 0.32mm~0.38 mm in diameter) were used to puncture the relevant points once every day and lasted for four weeks. Major relevant points included bilateral Neiguan (PC 6), shuigou (GV 26), and sanyinjiao (SP 6). Adjunct points included Jiquan (HT 1), Weizhong (BL 40) and Chize (LU 5); For dysphagia, Fengchi (GB 20), Yifeng (TE 17) and Wangu (GB 12) were added; for tightened finger grasping, Hegu (LI 4) were added; For slurred speech, Lianquan (CV 23), and blood-letting therapy on Jinjin (Ex-HN 12) and Yuye (Ex-HN 13) were added; For cross-foot, Qiuxu (GB 40) toward Zhaohai (KI 6) were punctured.

Procedure of acupuncture: first, bilateral Neiguan (PC 6) was punctured 15mm~25mm perpendicularly

with reducing manipulation through rotating, lifting and thrusting for 1 min. Next, Shuigou (GV 26) was punctured 5mm~10mm obliquely toward the nasal septum with heavy sparrow-pecking manipulation until the eye ball became wet or with tears; Then, Sanyinjiao (SP 6) was punctured 25mm~40mm along the medial aspect of the tibia(45°) with reducing manipulation of lifting and thrusting until three times of twitching of the affected-side lower limb.

After that, Jiquan (HT 1) was punctured (location: 1 cun below the original location) 25mm~40mm perpendicularly after avoiding axillary hairs with reducing manipulating by lifting and thrusting until three times of twitching of the affected side upper limbs; Chize (LU 5) was punctured 25mm perpendicularly upon 120° of elbow flexion with reducing manipulation by lifting and thrusting until three times of twitching of the affected side finger; Weizhong (BL 40) was punctured 15mm~25mm perpendicularly with supine position and straight leg raising by reducing manipulation of lifting and thrusting until three times of twitching of the affected-side lower limb; the points Fengchi (GB 20), Wangu (GB 12) and Yifeng (TE 17) were punctured 50mm~65mm toward the Adam's apple with reinforcing manipulation by small-amplitude and high-frequency rotation, 1 min for each point; and Hegu (LI 4) was punctured 25mm~40mm toward Sanjian (LI 3) with reducing manipulation by lifting and thrusting until the twitching of the index finger or natural extension of the five fingers.

The conventional group was treated with the conventional needling method combination. The needles are exactly the same as the treatment group. The acupuncture formula and operation are all on the basis of the fifth edition of *Acupuncture Therapeutics*. The frequency was one time a day and lasted for 4 weeks.

The conventional points used including Jianyu (LI 15), Quchi (LI 11), Hegu (LI 4), Waiguan (TE 5), Huantiao(GB 30), Yanglingquan (GB 34), Zusanli (ST 36), Jiexi (ST 41) and Kunlun (BL 60).

Procedure of conventional acupuncture, the affected side points were punctured with even reinforcing-reducing manipulation for 1 min.

Outcome

If a patient died during the whole six-months follow-up period, the follow-up then ended. Thus, crude mortality was selected as primary outcome. Scores evaluated by neurological impairment scale system at the end of treatment (four weeks) that including neurological impairment health center score of state-maintained (NIHSS), non-NIHSS (the finger functional of the extremities), the Scandinavian Stroke Scale (SSS), the Chinese Stroke Scale (CSS) as well as the Barthel Index (BI) were selected as predefined secondary outcomes. The neurological impairment scale was blinded by researchers who were trained for this purpose. After that, initial data were preserved by the data management and locked by the administrators for blind review.

Statistical analysis

Statistical analysis was carried out blindly by a team from another research center (Department of Epidemiology, Medical College of Chinese People's Armed Police Force). SPSS version 11.5 (SPSS Inc, Chicago, USA) was used for detail analysis. Chi-square test was used to compare the different of rates or distribution between the XNKQ and the conventional treatments with RR and 95%CI (Confidence Interval) to express the effective. Study t test or Z test was used to compare the difference of the two groups. Grade data were compared using ridit method. Also, repeated measure was used to evaluate the scores of SSS.

Results

Approximately 600 patients with cerebral apoplexy expressed their interests in participating in this study in a period of 30 months--from June 2005 to December 2007. The patients could be classified into three stages after their cerebral apoplexy, which included acute stage, recovery stage and sequela stage. Among them, 234 patients under recovery stage were assigned into XNKQ group and conventional group randomly. During the whole clinical treatment period, 116 and 118 cases were treated with XNKQ

and conventional method respectively. A six-months follow-up was carried out for all 234 patients with compliance rate of 100% in both groups. However, one patient in the XNKQ and two in the conventional respectively died (see figure 1). The XNKQ method

seemed to lower the mortality rate of cerebral apoplexy attack with RR (95% CI) of 0.54 (0.50-5.64, $P=0.57$) compared with the conventional treatment.

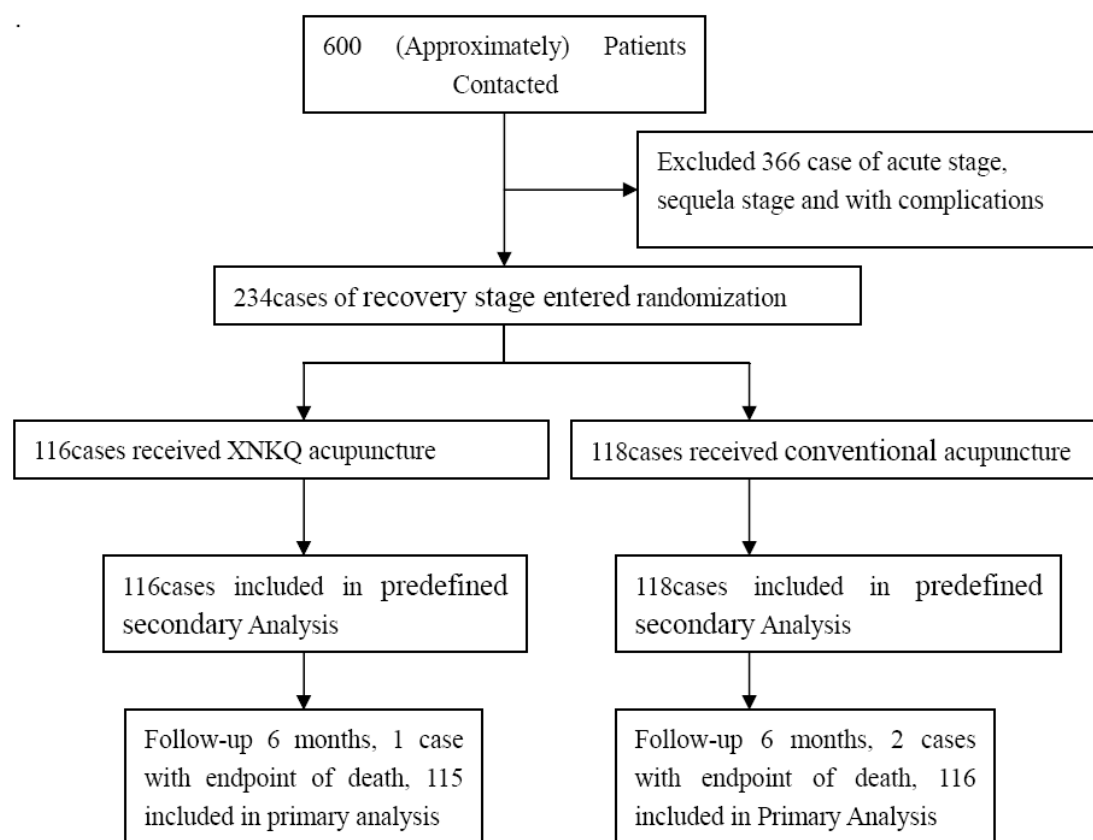


Figure 1. Trial flow diagram.

Table 1. Baseline characteristics of the study population

		XNKQ	Conventional	
Gender	male	75	75	$\chi^2=0.03, P=0.86$
	female	41	43	
Age	mean (SD)	61.29(8.87)	61.69(9.51)	$t=0.33, P=0.74$
Disease Duration (d)	mean(SD)	30.89(57.87)	22.22(23.03)	$Z=0.59, P=0.55$
Attack times	1	76	84	$\chi^2=0.92, P=0.63$
	2	19	18	
	3	21	16	
MMSE	mean(SD)	27.52(2.51)	27.29(2.51)	$t=0.70, P=0.49$

No obvious distribution difference of sex, age, disease duration and attack times between the study groups was found. More than half of the patients attacked by cerebral apoplexy the first time accepted acupuncture on their recovery period. The cognition function (Mini-Mental State Examination, MMSE) was administered, when patients entered the study. The MMSE score was almost the same in the XNKQ group and the conventional group, 27.52 (2.51) and 27.29 (2.51) respectively (see table 1).

The neurological impairment scale

The neurological functions were determined using the neurological impairment scales including NIHSS,

non-NIHSS, CSS, and SSS at the end of the treatments. At the same time, the changes of each score were calculated by reducing the latter score (the after treatment score) from the previous score (the entering group score). The XNKQ and the conventional method had both lower scores of NIHSS and CSS after treatment compared to admission, yet the XNKQ had a higher effect on treating cerebral apoplexy of both indexes. At the same time, the XNKQ showed a higher rate (90.52%, 105/116) of effectiveness than that of the conventional method (76.27%, 90/118). Also, the XNKQ method gave a protective effect on lowering the failure or deterioration rates of NIHSS score with OR(95%CI) of 0.34 (0.16-0.74) (see table 2).

Table 2. Changes of the NIHSS and CSS score between XNKQ and conventional groups

		XNKQ	Conventional	
NIHSS	Before treatment	8.69(3.16)	8.53(4.11)	$t=0.34, P=0.73$
	After treatment	3.97(2.88)	5.88(3.69)	
	Δ NIHSS	4.72(3.32)	2.64(3.16)	$t=4.88, P=0.00$
	Improvement(>0)	105	90	OR=0.34 (0.16-0.74), $P=0.004$
	Failure(0)	7	17	
	Deterioration(<0)	4	11	
CSS	Before treatment	18.12(7.19)	18.41(7.97)	$t=0.29, P=0.76$
	After treatment	9.84(5.68)	14.07(6.93)	
	Δ CSS	8.22(6.46)	4.34(5.06)	$t=5.09, P=0.00$
	Improvement(>0)	89	86	OR=0.82 (0.45-1.47), $P=0.50$
	Failure(0)	22	25	
	Deterioration(<0)	5	7	

Note: Δ NIHSS and Δ CSS were got by reducing the after treatment score the before treatment score. If Δ NIHSS or Δ CSS was less than 0, equal 0 or more than 0, then deterioration, failure and improvement were defined respectively. OR was calculated by comparing the improvement with the combination of deterioration and failure of the Δ NIHSS and Δ CSS.

Though both treatments of XNKQ and conventional method could lower the severities of cerebral apoplexy grade, when scaled using CSS and non-NIHSS, yet the XNKQ had a more effective effect than the conventional method (see table 3).

On the contrary to previous indexes, a four-time series of SSS score showed an increase trend after treatment with XNKQ or conventional method for cerebral apoplexy patients. Repeated analysis

manifested a higher level of SSS score compared to the conventional method (see figure 2).

Daily of activities

The Barthel Index (BI) was measured after finishing the treatment. After treatment, the BI score of most cases was elevated by both methods. The elevation ratio in the treatment group and control group was

77.59% (90/116) and 65.25% (77/118) respectively. There was different elevation in the two groups ($Z=3.32, P=0.00$). However, a higher level of BI scored could be found in the XNKQ group compared to the conventional group.

At the same time, the XNKQ method gave a protective effect on lowering the failure or deterioration rates of BI score with OR (95%CI) of OR=0.54 (0.30-0.97) (see table 4).

Table 3. Grade distributions of CSS and non-NIHSS in XNKQ and conventional group

			XNKQ	Conventional	
CSS	Before treatment	Var.mitis	28	35	$\chi^2=2.84, P=0.24$
		medium-sized	86	79	$u=0.55, P=0.58$
		Gravis type	2	4	
	After treatment	Var.mitis	95	72	$\chi^2=12.47, P=0.00$
		medium-sized	21	46	$u=-2.76, P=0.01$
non-NIHSS	Before treatment	0(normal)	15	14	$\chi^2=4.86, P=0.30$
		1	22	35	$u=1.19, P=0.24$
		2	79	69	
	After treatment	0	41	19	$\chi^2=17.27, P=0.00$
		1	57	59	$u=4.04, P=0.00$
		2	18	40	

Note: Chi square was used in comparing the distribution of the data in XNKQ and the conventional treatments; u values were calculated using ridit method in comparing the grade data. non-NIHSS, 0 is normal, 1 and 2 is deterioration progressively.

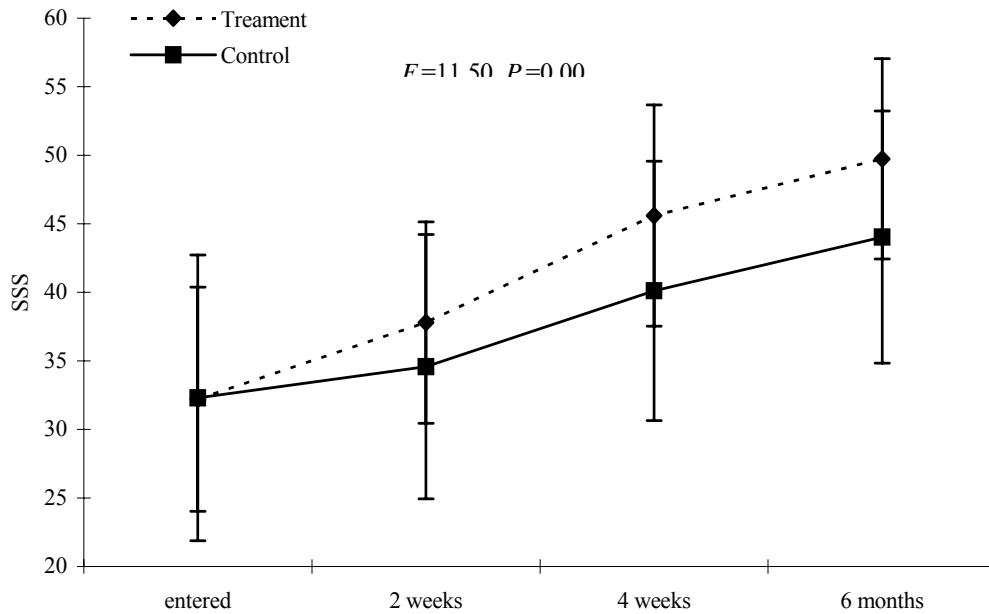


Figure 2. The four-time series SSS score in cerebral apoplexy patients treated with XNKQ and the conventional method.

Table 4. Changes of the BI between XNKQ and Conventional groups

		XNKQ	Conventional	
BI	Before treatment	42.24(18.04)	39.27(18.71)	$t=1.23, P=0.22$
	After treatment	58.30(24.30)	49.06(25.61)	
	Δ BI	15.86(29.95)	9.78(20.31)	$Z=3.32, P=0.00$
	Improvement(>0)	90	77	OR=0.54 (0.30-0.97), $P=0.04$
	Failure(0)	3	19	
	Deterioration(<0)	23	22	

Note: Δ BI was got by reducing the before treatment score from the after treatment score. If Δ BI was less than 0, equal 0 or more than 0, then deterioration, failure and improvement were defined respectively. OR was calculated by comparing the improvement with the combination of deterioration and failure of the Δ BI.

Discussion

The recovery stage of apoplexy is characterized by functional disturbance of the limbs due to obstruction of qi and blood in meridians. The treatment principle should be to dredge meridians and regulate qi and blood. The method of XNKQ acupuncture targets the main pathogenesis of “blocking of the brain” through “refreshing brain, opening orifice, dredging meridians, and nourishing the liver and kidney”. In addition, this method also values refreshing, regulating and tranquilizing mind. The “mind” here not only refers to mental, conscious and thinking activities but also manifests the functions of Zang-Fu organs and four extremities. Since apoplexy due to phlegm-stasis obstructing the meridians is mainly located in the brain, the meridian problems, just like stroke due to phlegm-stasis obstructing the Zang-Fu organs, can also be treated with mind-refreshing or mind-regulating method (2).

MMSE, The Neurologic Impairment Scale (NIHSS, CSS, and SSS) was detected when patients entered the study. There was no significant differences between the two groups, it indicated that the baseline material in the two groups had good compatibility. The Neurologic Impairment Scale can reflect the severity of the disease. The higher score of NIHSS, non-NIHSS, and CSS was, and the lower the score of BI and SSS was, the more severe of the disease were. This study indicated that XNKQ acupuncture was much better than conventional acupuncture in improving the Neurologic Impairment Scale after four weeks treatment.

The Barthel Index (BI) is a common turnover scale in clinical study for dependence and disability

severity of stroke patients. In the case of clinical observation score=60, most patients can manage their daily life activities. In the case of 80, patients can live independently with partial help. The specificity can reach 94%-95% (6). This study compared average BI score and showed that the two therapies can elevate BI with a better effect in the treatment group than the control group. This indicated that the XNKQ acupuncture was better than conventional acupuncture in improving the patients' daily life activities.

The Neurologic Impairment Scale can reflect the severity of the disease and BI can reflect the prognosis of the disease. The research findings showed that XNKQ acupuncture was better than conventional acupuncture in improving the Neurologic Impairment Scale and in improving the patients' daily life activities in recovery stage of cerebral apoplexy. This result was consistent with our earlier systematic review results (7).

However, the 234 cases included in the study was too few to determine mortality ratio. Our hospital is the hospital characterized by acupuncture and patients came here mainly to receive acupuncture treatment. Therefore, we had no other choice, but conventional acupuncture for the control group and could therefore not include western medicine treatment. Further research should increase the sample size and also compare with western medicine.

To sum up, our conclusion is that XNKQ acupuncture is better than conventional acupuncture in improving the Neurologic Impairment Scale and in improving the patients' daily life activities in the recovery stage of cerebral apoplexy.

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Therapeutic effect of intensive sensory motor integration (SMI) training in Children with ADHD: Behavioral and fMRI studies

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Abstract

This study used behavior ratings and BOLD-based fMRI to investigate the efficacy and brain locations of children with ADHD responding to SMI training. Subjects were eight normal male students, eight male students with ADHD post-SMI training and eight male students with ADHD pre-SMI training. Mean age was 10 ± 1.5 years old, none were taking medications and all with IQ above 90. Behavior data were collected from the pre- and post-SMI training groups including parents' SMI checklist, parents' ADHD checklist, and behavior ratings by the chief class teachers before and after SMI training for three months. All three groups underwent BOLD-based fMRI study using the attention paradigm of go/no go task with stimulation-controlled and response-controlled sessions. MANOVA analysis of all behavior ratings showed a significant difference ($P < 0.05$) in the post-SMI training ADHD group. Comparison of the BOLD-based fMRI results of response-controlled sessions in the three groups revealed a significant difference ($P < 0.05$) between the pre- and post-SMI training ADHD groups in the pre-frontal area, medial frontal area, cingulate gyrus, and caudate nucleus. The pre-SMI training ADHD group showed limited activation in fronto-striatal regions. The post-SMI training ADHD group had improvement in BOLD activation as in corresponding regions as matching the activation pattern of normal control. BOLD-based fMRI improving results of the post-SMI training ADHD group correlated with clinical improvements based on teachers' and parents' observations and check-list findings of long time improved full concentration, skillful fine movement and execution ability. Intensive SMI training may provide an effective therapeutic intervention for ADHD.

Keywords: Sensory-motor integration, emotional difficulty, learning disability, ADHD, ADD, sensory integration therapy.

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Introduction

Attention Deficit Hyperactive Disorder (ADHD) is subdivided by the American Psychiatric Diagnostic and Statistical Manual Version DSM-IV into Predominately Hyperactive-Impulse (ADHD/H), Predominately Inattentive (ADHD/I), and Combined Type (ADHD/C). Poor interference control and poor inhibition are considered the primary defects in ADHD, which result in deficits in sustained attention and executive function (1). The prefrontal cortex and basal ganglia are thought to be involved in interference control and the response inhibition, respectively (2). The prefrontal cortex also has also been postulated to be involved in maintaining representations of relevant information from interference due to competing information, and the basal ganglia in the inhibition of inappropriate behavior (3,4).

Behavioral and molecular genetic studies have revealed a genetic component for ADHD involving the dopaminergic system (5,6). One of the most common medications used for the treatment of ADHD, methylphenidate, is thought to act on the brain by amplifying dopamine signals, suggesting that one of the primary brain defects in ADHD may lie in fronto-striatal networks involving the prefrontal region and the basal ganglia (7). Functional studies have generally shown less activation in the frontal and cingulated regions for participants with ADHD as compared to controls (8-12). The cingulate gyrus functions as an integral part of the limbic system, which is involved with emotional formation and processing, learning, and memory. Also, executive control needed to suppress inappropriate unconscious priming is known to involve the anterior cingulate gyrus (13). In summary, previous studies have shown that there are pronounced differences between children with ADHD and healthy controls in the network involved in interference control and response inhibition. The neuro- psychological deficit in children with ADHD includes high cortical executive control, such as response inhibition and motor planning(1,14-15). Experimental studies showed that when children with ADHD were asked to inhibit motor performance, performance was very poor in tasks such as go/no-go (14,16-18), stop tests (11,19-20), and the Stroop tests (21-22). Hyperactive

adolescents who were asked to do temporal corrective motion tasks also showed very poor performance (22). Dis-inhibition of motor performance provides the patho- physiological mechanisms for wide-spread symptoms in hyperactive children, including clumsiness, hesitant response to cognitive performance, problems of slow reaction to teachers' or parents' instructions, inability to refuse inadequate seduction, antisocial behaviors, and difficulty in emotional control (23). Brain structural MRI studies in children with ADHD suggested that reversal of caudate asymmetry was related to deficit in response execution tasks and suggested that caudate dysfunction and hypo-activity of the frontal lobes were the primarily responsible for ADHD dysfunction (24-25). In addition, fMRI BOLD data in ADHD showed reduced activity in the frontal-striatal region which was correlated with impaired performance on a response inhibition task (24). Decrease in blood oxygen flow to caudate nucleus in ADHD has also been demonstrated(26). Dimethylphenidate (Ritalin) can temporally improve ADHD behaviors in children (27).

Studies of data from SMI training at the Everspring Foundation in Taiwan over a 20 year period showed that improving body image in brain facilitates sensory motor integration, which is very important for students who show distraction and clumsiness in an academic and emotional learning environment (28-30). SMI trainings is modified from Ayres' Sensory Integration Therapy and is to enhance large amounts of inhibitory and a few excited modulations to inner ear balance organs, discriminating touch sensation of heavy pressure, and proprioceptive sensation (31-33). This suggested re-integration and re-modulation at a low center of the brain stem with secondary high cortical systems of original sensory and motor information, can improve fine body images in brain (29-30). As a result, clumsy limbs become skillful in eye-hand coordination , and over-sensitive sensation of eyes, ears, and touch are transitioned towards a more even tone with surroundings. Children with ADHD become more concentrated, more organized and better executive abilities, improving daily life and experimental manipulation, as well as interpersonal and social relationships (29-30). Teachers and volunteer parents typically became the chief executive trainers (28).

The main activities of SMI trainings are designed to enable recapture of ontogenetic and phylogenetic early childhood prone-extension posture. In animals, this posture is known to be important for eye-hand coordination and for full concentration during the search for food and when avoiding being eaten by predators, and is thus very important for survival (31-32). In humans, it can facilitate smooth movement during eye pursuit, improve eye-hand coordination, and create a well-developed body image. It can also improve auditory and visual processes at a lower level of the brain stem, together with secondary high cortical functions that are involved in the human learning and reading processes (31-32). Activities in this posture were also very helpful as a means of providing long term improvement in various conditions frequently seen in ADHD (23).

Functional magnetic resonance imaging (fMRI) is a well developed, non-invasive examination for brain function (14,16-18). Using cognitive manipulation of short duration, through very clear spatial analysis of brain this technique can be used to locate the elicited brain regions associated with cognitive abilities. This study was designed to use BOLD fMRI to clarify the responsible brain locations and the locus of difficulty in motor inhibition in children with ADHD who received SMI training. Results of response-controlled sessions in BOLD fMRI showed that students with ADHD who received SMI training had significantly improved of activation matched to untrained controls. These effects were more prominent in the pre-frontal cortex, medial frontal area, cingulate gyrus, and caudate nucleus.

Methods

Three written instruments were used in research evaluation, including an eight item evaluated by chief class teachers, ADHD checklist (34), and the Child Sensory Motor Integration (SMI) Checklist evaluated by parents (35-36), which included 13 sub-items on tactile defensiveness (dis-inhibition). These have been explained detail in behavioral study (23). In This study all research evaluations used twice: first before SMI training and second after training for three months, and another 3 months follow-up in training group. The second and third evaluations showed

improved, not improved, or regressive conditions in the recent two weeks. Here we make briefly introducing.

- Evaluation of eight events in school life by class teachers---i.e. learning ability about the liberal arts, learning ability about math lecture, manipulating ability to toys and instruments, student social relationship, hyperactivity and concentration ability, speech fluency and articulation ability, emotional stability vs. temper outburst and impulsivity, emotional stability vs. anxiety-depression. Each items are rated according to the degree of “excellent or very stable”[1], “normal or average”[2], “mild disorder or slightly being unable to keep up with class mates”[3] or “obvious or severe dysfunction”[4].
- The ADHD checklist was developed from the ADHDT (Attention-Deficit/Hyperactivity Disorder Test) designed by Gilliam E James (30). It is based on ideas from the Diagnostic and Statistic Manual of Mental Disorder DSM-IV, in which ADHD includes three main symptoms: hyperactivity, impulsivity, and attention-deficit. There are thirteen sub-items concerning hyperactivity, ten sub-items concerning impulsivity, and thirteen sub-items concerning attention-deficit. In total there are 36 sub-items, with excellent reliability and construct validity. Each sub-item is rated at the following levels: “never or very stable” [1], “mild abnormal” [2], “severe abnormal” [3]. After translating the ADHDT into a Chinese language version, we have used it in the Taiwan Research Institute of Learning Disabilities, Everspring Foundation for more than three years where it has shown its sensitivity to symptoms of ADHD which is very consistent with clinical observations. This scale with 36 sub-items has T-value of discriminating ability above 3, and has a Cronbach alpha of 0.9405 and repetitive tests with 2 week interval show correlation 0.8367.
- The rating scale “Child Sensory Developmental Checklist”(SMI checklist)

(35-36), is modified from Ayres checklist of the book "Sensory Integration and the Child"(32), and has 64 sub-items in 8 subcategory: Vestibular Bilateral Dysfunction, Dis-inhibition, Tactile Defensiveness, Developmental Dyspraxia, Visual Form and Space Disorder, Gravitational Insecurity, Giddy temper outburst and academic drop, and low self-esteem and self-confidence. Every sub-item has five sub-scales for parental ratings-- "never"[1], "a few"[2], "occasional"[3], "frequent"[4], or "always"[5]. Parents make circles about student's frequency on sub-items, of last 6 months about learning and emotional behavior, giving credit accordingly 1 point, 2 point, 3 point, 4 point, or 5 point respectively. The higher point means the more worse in behavior condition. Our analysis showed that this rating scale had a Cronbach alpha of 0.9306 and the correlation 0.8266 for repetitive tests with 2 week interval.

Study subjects and research design

An elementary school in Taipei City with a total of 410 students was selected for subject recruitment. In order to select students with maladjustment before the start of training, we distributed two rating scales, namely the Chinese version of the Child SMI Checklist and the ADHD checklist, to all the parents of attending school children. We asked the parents to complete these evaluations. At the same time, the teachers were asked to evaluate each student with regard to eight events in school life. The total scores for each syndrome were transformed into standard T-scores for comparison and the selection of students with maladjustment. The criterion for maladjustment was a T-score of 35 points or lower (mean -1.5 Std.). Only students having two or more items within the criteria of maladjustment were designated as needing intensive SMI training. However, it was required that at least one of these items were from a teachers' rating, as teachers were considered to be more objective and provide a fairer rating. Parents had detail observations about the students, but parental

ratings were considered to have greater potential for over- or under- rating. Based on clinical observations, the students selected as having maladjustment in this study represented those with learning disabilities, ADHD, and/or emotional difficulties.

In the study design, odd numbered students with maladjustment were assigned to the training group, i.e. the experimental group in this study, and received intensive SMI training in the first phase which consisted of the following daily tasks of prone extension activities for three months in total: on a scooter board in a prone posture pushing a ball against a wall for 10 minutes, spinning on scooter board for 10 minutes, walking on hands with legs propping on a scooter board for 10 minutes, forward somersault practice on cushion for 10 minutes, and exchange of balls between two students also in a prone extension posture for 10 minutes (see figure 1). The teachers' advice and psychological counseling were also provided during the training. The even numbered students with maladjustment in the classes were assigned to the control group. They received only the teacher's advice and psychological counseling for emotional and academic problems in the first phase, and were scheduled to receive intensive SMI training in the second phase. Thus, the training (experimental) group included 32 students, 26 males and 6 females, and the control group included 32 students, 23 males and 9 females. The experimental group lost three students before the start of training due to lack of parental consents. Comparison of the characteristics of experimental and control groups with maladjustment revealed no significant difference in age, total scores and individual scores for each syndrome in the SMI checklist, class teacher's rating, ADHD checklist, and academic scores from Chinese language and mathematics. The total score for tactile defensiveness on the SMI checklist, however, was significantly worse in the control group. Both the training (experimental) group and control group received follow up evaluations before the end of the first phase training for 3 months including SMI checklist, ADHD checklist, and teachers' ratings. These results were compared with those of the initial evaluations. MANOVA analysis showed a significant improvement ($P < 0.05$) in all ratings of the SMI training group. These results have been published elsewhere (23).

After SMI training for three months, we selected eight male students of fourth, fifth, and sixth grades from the training(experimental) group who were ADHD/C type and had severe disorder according to the results of parents' ADHD checklist and teachers' rating (syndromes rating at or below mean plus 2 standard deviations). These eight students underwent BOLD fMRI and were designated as the experimental or SMI training group. From the original control group of students with ADHD who had not yet received SMI training, we also selected eight male students from the fourth, fifth, and sixth grades who were ADHD/C type and had severe disorder according to the results of parents' ADHD checklist and teachers' rating, who then underwent BOLD fMRI and were designated as the pre-training group. Another eight students with stable emotion and normal academic achievement as well as normal ADHD checklist scoring from the fourth, fifth, and sixth grades underwent BOLD fMRI and were designated as the normal control group.

Parental counseling sessions about how to raise ADHD students' self-esteem and self-confidence for psychological re-construction were held on every weekend. MANOVA was used to compare differences between the training and pre-training groups including SMI checklist, tactile defensiveness (dis-inhibition) checklist, ADHD checklist, and teachers' ratings.

Functional MRI studies

Subjects who participated in the BOLD fMRI studies included eight students of the normal control group, eight from the post SMI training group and eight from the pre-training group. The subjects in these groups were all males aged 10 ± 1.5 with IQ above 90. Consent for the study was obtained for all participants and the protocol was approved by the Institutional Ethics and Radiation Safety Committees of Taipei Veterans General Hospital (document number 94-01-06A). All subjects were native Chinese speakers without any history of neurological disorders, and had normal or corrected to normal vision. Right handedness of the subjects was verified using the modified Edinburgh Inventory.

Task design for fMRI studies

Two sessions of go/no-go tasks (16), stimulus-control and response-control, were implemented using Presentation software (Version 0.55, Neurobehavioral Systems Inc, California, USA) with graphic materials (see figure 2). Each task lasted approximately 9 minutes and consisted of eight alternating go, no-go and fixation blocks, each 22 seconds long. Each block began with the presentation of the task instruction ("press button for all pictures" for go blocks, "do not press button for turtle picture" for no-go blocks utilizing a turtle picture as the target and "fix on cross" for fixation blocks) followed by pictures in each trial. For go blocks, subjects were instructed to press a button for every picture. No target picture (turtle) was delivered during these blocks, and no other picture was repeated within each block. For no-go blocks, subjects were instructed to press the button for every picture except the target picture (turtle). Target pictures (turtle) appeared on 50% of the trials and no other picture was repeated within each block. In the response-controlled session, go and no-go blocks had equal numbers of key presses (6 button presses / block) but differed in the number of trials (6 in go blocks; 12 in no-go blocks) and rate of stimulus presentation (exposure duration 1300 ms; inter-trial interval 3600 ms for go blocks and 1800 ms for no-go blocks). In the stimulus-controlled task, go and no-go blocks had an equal rate of presentation (exposure duration 1300 ms, inter-trial interval 1800 s) and number of trials (12 button presses / block) but differed in the number of button presses (12 in go blocks, 6 in no-go blocks).

Visual stimuli were presented on a screen at the feet side of the subject with an LCD projector (EPM-7850, Epson, Japan) outside the shielded scanning room. Viewing distance was about 150 cm. Subjects viewed the stimuli via a reflection mirror with the visual angle of each figure subtended $\sim 4-6^\circ$, while that of the fixation crosshair subtended $\sim 1^\circ$. The response of the subjects was recorded by Presentation software using the MR-compatible handheld response pad (HH-1x4L, Current Designs Inc, Pennsylvania, USA).



Figure 1. Five methods of exercises on prone extension posture on scooter boards or cushions.

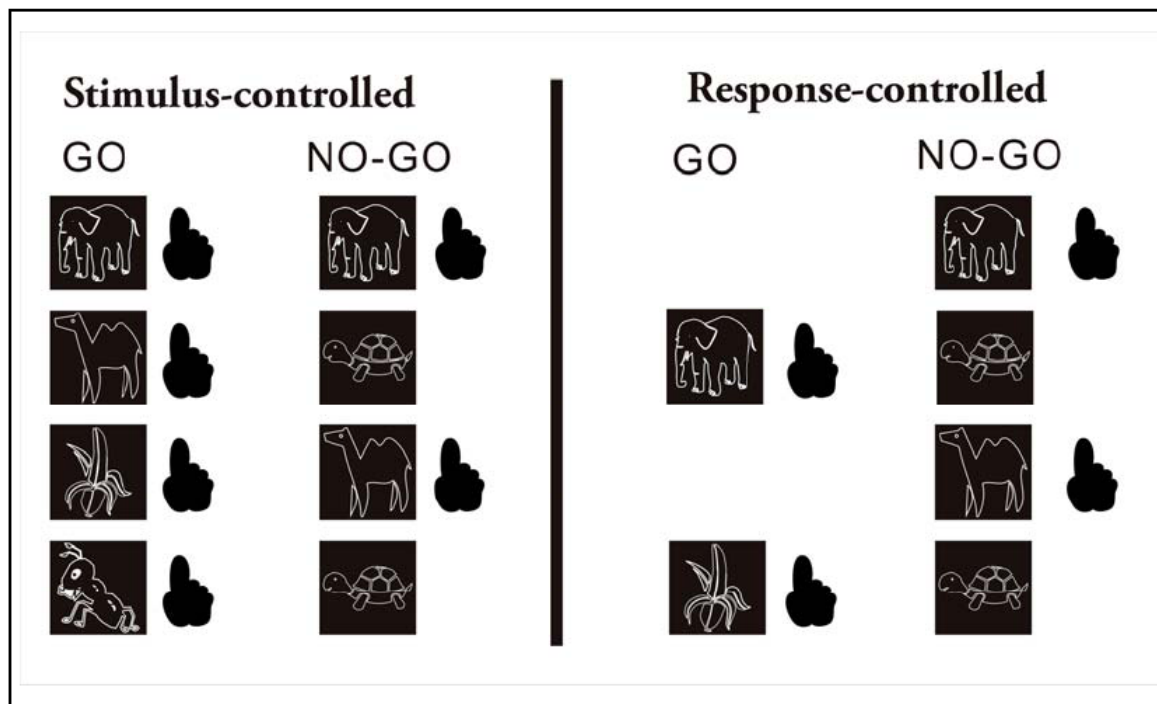


Figure 2. Stimulus-controlled and response-controlled methods in BOLD fMRI.

Data acquisition for fMRI and anatomical images

Images were acquired using a 1.5T MRI system (Sonata, Siemens, Germany) equipped with an actively shielded gradient and a quadrature head coil. Subjects' heads were immobilized with a vacuum bean-pad in the scanner. Functional data were acquired with a T2*-weighted gradient-echo EPI using BOLD contrast (TR/TE/θ= 2000 ms/40 ms/90°, slice thickness = 5 mm, inter-slice gap = 1 mm, FOV = 230 mm, 64 × 64 × 20 matrix, whole brain converted to voxel size). For each slice, 269 images

(NR, repetition number) were acquired. The first five dummy images were discarded from the analysis to eliminate non-equilibrium effects of magnetization. Anatomical images were acquired using a high-resolution 3D T1-weighted, MP-RAGE sequence (Magnetization Preparation Rapid Gradient Echo; TR/TE/TI/θ= 1810 ms/4 ms/1100ms/15°, 256 × 256 × 128 matrix, FOV = 230 x 230 x 192 mm, converted to voxel size).

Data processing and statistical analysis

Data were analyzed with statistical parametric mapping (SPM2 software from the Wellcome Department of Cognitive Neurology, London, UK), running under Matlab 6.5 (Mathworks, Sherbon, MA) on a PC. Scans were realigned, normalized, time corrected, and spatially smoothed with an 8-mm FWHM Gaussian kernel. The resulting time-series was high-pass filtered with a cut-off time window of 168 s to remove low frequency drifts in the BOLD signal and temporally smoothed with a hemodynamic response function (HRF). The main effect (go and no-go conditions) was studied by contrasting each task with the fixation condition. Hierarchical subtractions between the tasks were done to examine differential engagements of attention processing. Regions of interest were evaluated using a significance level threshold set at $P < 0.001$ (uncorrected) with spatial extent larger than 20 voxels. To affirm that the activation of voxels was due to increased activity resulting from the probed task instead of decreased activity in the reference task (i.e., lower BOLD responses as compared to the fixation condition), the deactivation contrasts (reference task vs. fixation condition) were exploited for an exclusive masking procedure. Masking contrast P values were set at 0.001 (uncorrected). Z maxima were localized on the normalized T1 structural image (an SPM99 template) and labeled using the nomenclature of Talairach and Tournoux (1988) by means of the Talairach Daemon (Research Imaging Center, The University of Texas, Austin, TX).

BOLD-based fMRI were originally scheduled to perform for normal control, pre- and post-SMI training groups, with additional one time of follow-up for post-SMI-training group three months after complete of trainings.

Results

Before and after SMI training, the MANOVA results of the two factors mixed design for SMI checklists of two groups show that there is interaction between the groups and the tests (SMI checklist) ($F_{1,14}=5.91$ $P=0.029$), which needs further clarify. ANOVA analysis of Simple Main Effect of SMI checklists shows that

this difference comes from an improvement of the training group ($F_{1,14}=8.18$, $P=0.024$).

The MANOVA results of the two factors mixed design for checklists of Tactile Defensiveness (TD) of two groups show that there is interaction between the groups and the tests (TD checklists) ($F_{1,14}=9.28$ $P=0.009$), which needs further clarify. ANOVA analysis of Simple Main Effect of TD checklists shows that this difference comes from an improvement of the training group ($F_{1,14}=8.95$, $P=0.020$).

The MANOVA results of the two factors mixed design for ADHD checklists show that there is interaction between the groups and the tests (ADHD checklists) ($F_{1,14}=20.78$ $P=0.0000$), which needs further clarify. ANOVA analysis of Simple Main Effect of the ADHD checklists shows that this difference comes from an improvement of the training group ($F_{1,14}=32.28$, $P=0.001$) and there is apparent difference in posterior tests of two groups ($F_{1,14}=9.46$, $P=0.0082$).

The MANOVA results of the two factors mixed design for the teachers' ratings (TC) show that there is interaction between the groups and the tests (teachers' ratings) ($F_{1,14}=14.13$ $P=0.002$), which needs further clarify. ANOVA analysis of Simple Main Effect of the teachers' ratings (TC) shows that this difference comes from an improvement of the training group ($F_{1,14}=20.47$, $P=0.003$) and there is apparent difference in posterior tests of two groups ($F_{1,14}=8.17$, $P=0.010$).

From MANOVA analysis of results obtained using the SMI checklists, tactile defensiveness checklist, ADHD checklist, and teachers' ratings before and after SMI training, all of the post-training data in the training groups showed significant improvement compared to before-training data ($P < 0.05$), a difference not seen in control groups.

Analysis of fMRI behavioral data

The accuracy (error rate) of response data recorded by Presentation software during fMRI studies was calculated with two-tailed evaluation with significance level of $P < 0.05$ which revealed no correlation in the paired comparison.

Analysis of BOLD fMRI image data

Stimulus controlled tasks showed no significant difference of BOLD-based activation between the pre- and post-training groups, or between the normal controls and the post-training group in different brain locations, indicating a lack of group difference in brain visual processing. Response control (B-A) in BOLD fMRI was the result of motor inhibition (when seeing a turtle) of the urge to press a button for every picture. The elicited brain activation for inhibition to press the button could be observed in the regions of interest expressed as the extent and magnitude of BOLD signal. Figures 3-1, 3-2, and 3-3 were the activated voxels of group results of the normal control, post-training, and pre-training groups, respectively; the post-training group showed nearly the same amount of activation as normal controls, while the pre-training group (subjects with ADHD before SMI training) showed much less activation in corresponding regions. Figures 4-1, 4-2, 4-3, and 4-4 compared data on mean voxels of the three groups in

different brain locations. All of these figures showed that the pre-training group (subjects with ADHD before SMI training) had very limited activation in the pre-frontal areas, the medial frontal area, the cingulate gyrus, and the caudate nucleus. Statistical analysis revealed that the differences in perfusion between the post- and pre-training groups reached significance level ($P < 0.05$). All of those BOLD fMRI examinations were performed two week to two months after SMI training for 3 months and suggest that the post-training group had long lasting behavioral effects which were represented by consistent BOLD-based activation like normal subjects. In the sixth month after the start of training, i.e. post-training for three months, because of nearing the end of the school semester and final examinations, only four students returned for follow-up BOLD fMRI study, which showed the same excellent behavior assessment and thick activation in the same areas, suggesting SMI training to ADHD students has long lasting effect.

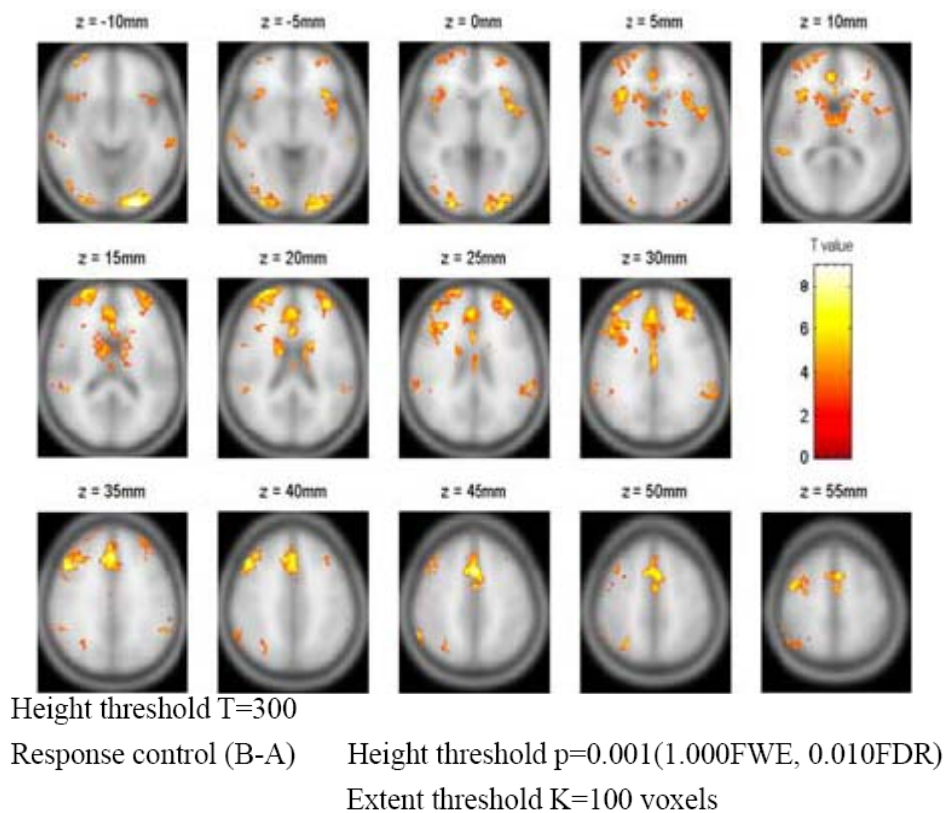


Figure 3.1. BOLD fMRI of Normal Control Group.

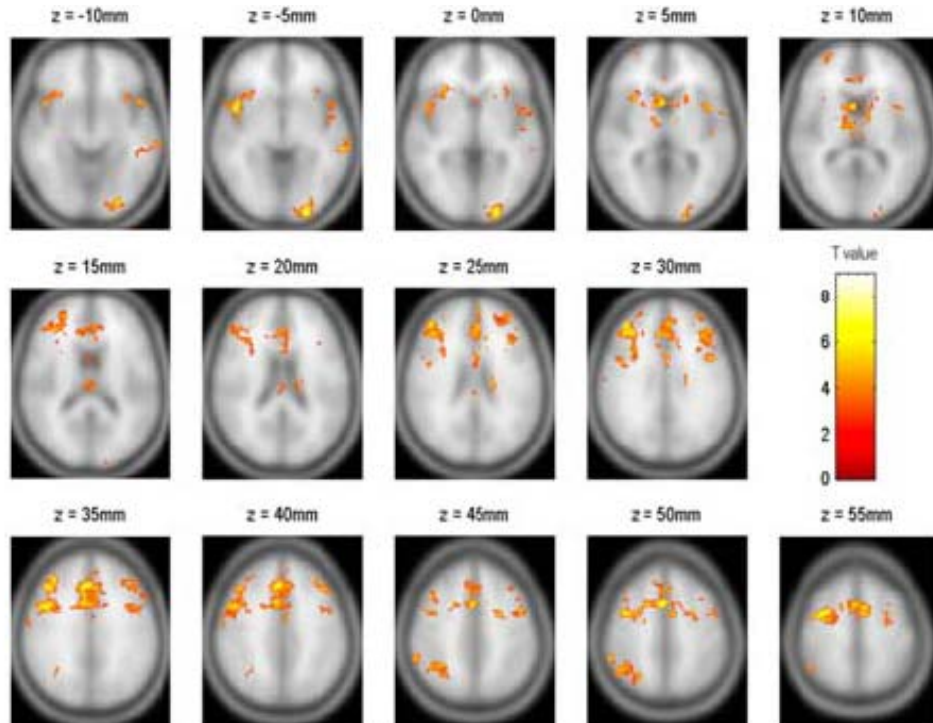


Figure 3.2. BOLD fMRI after SMI training in children with ADHD.

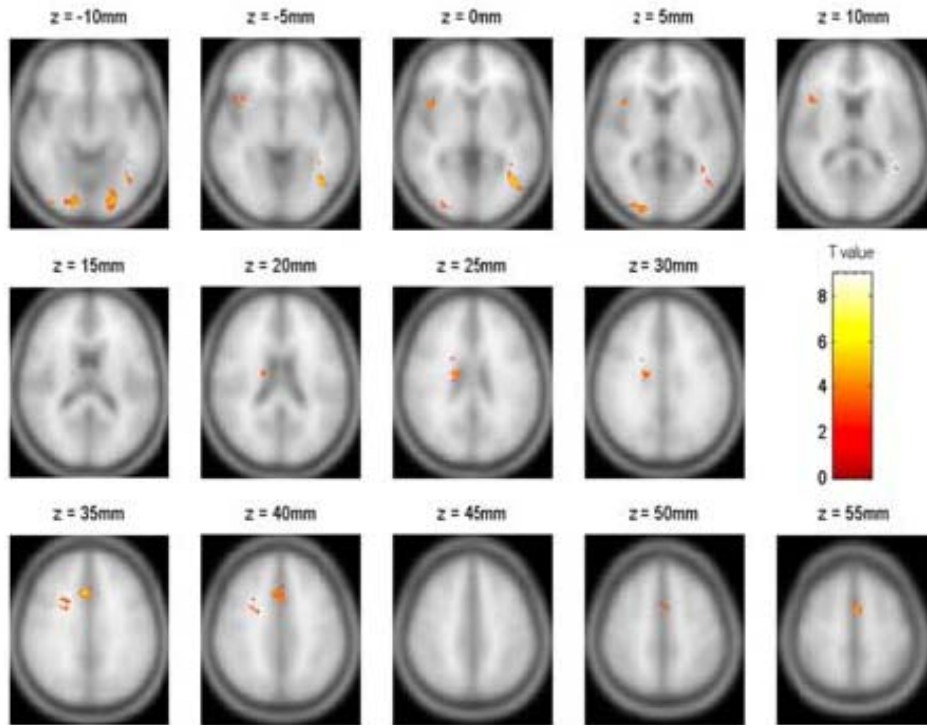


Figure 3.3. BOLD fMRI before SMI training (control) in children with ADHD.

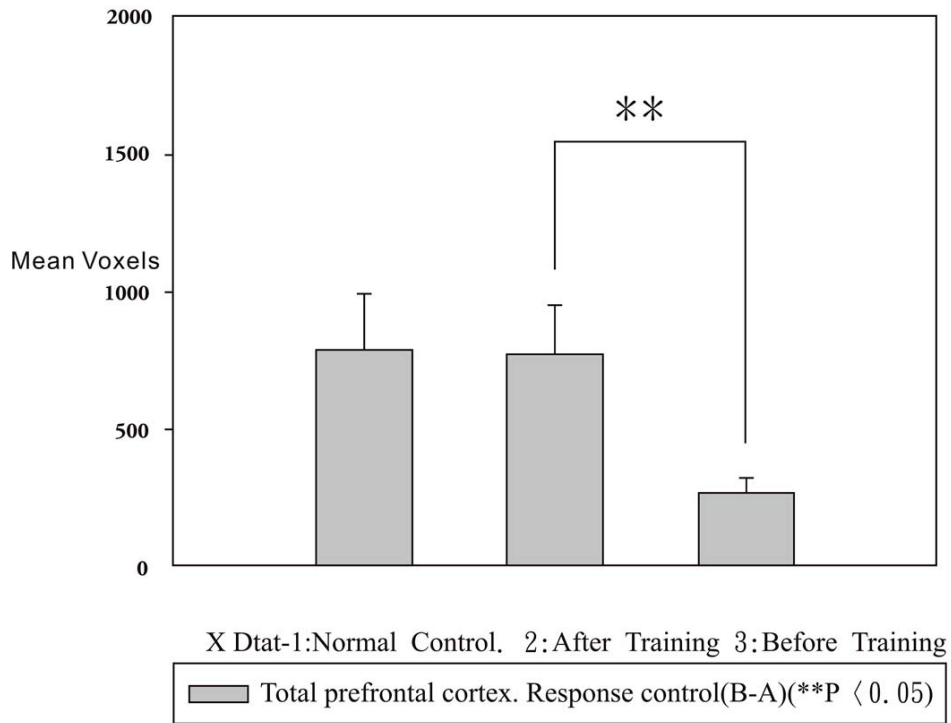


Figure 4.1. BOLD fMRI of the total prefrontal cortex in the three groups.

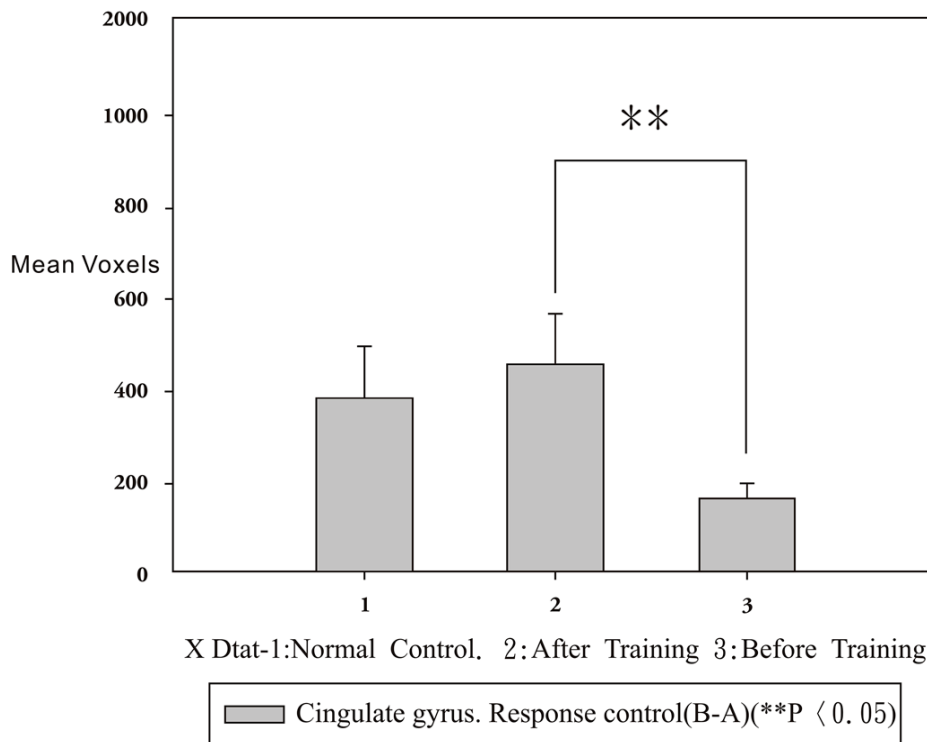


Figure 4.2. BOLD fMRI of cingulate gyrus in the three groups.

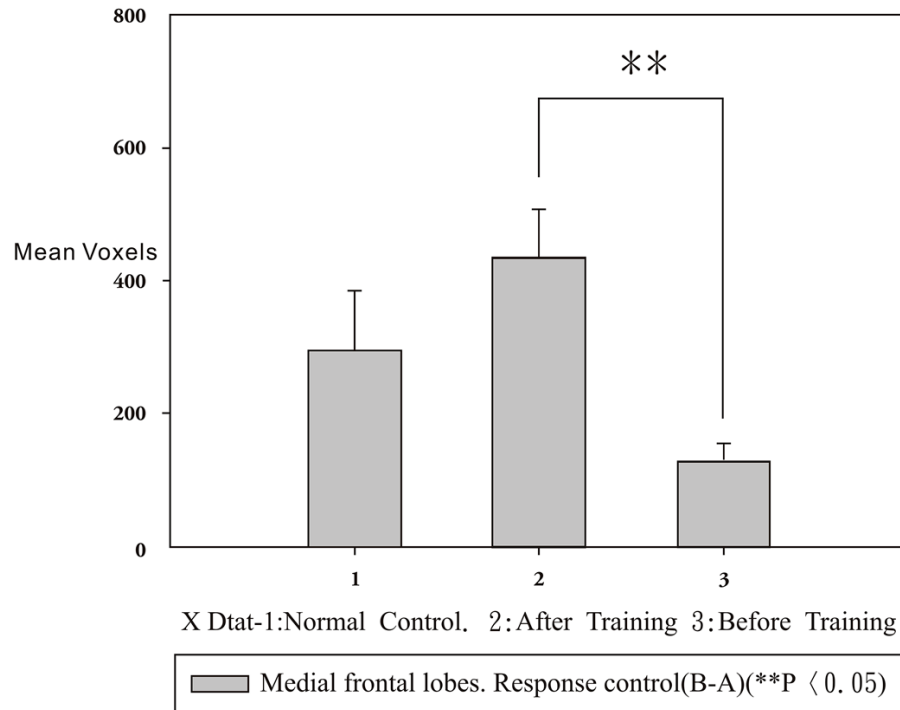


Figure 4.3. BOLD fMRI of medial frontal lobes in the three groups.

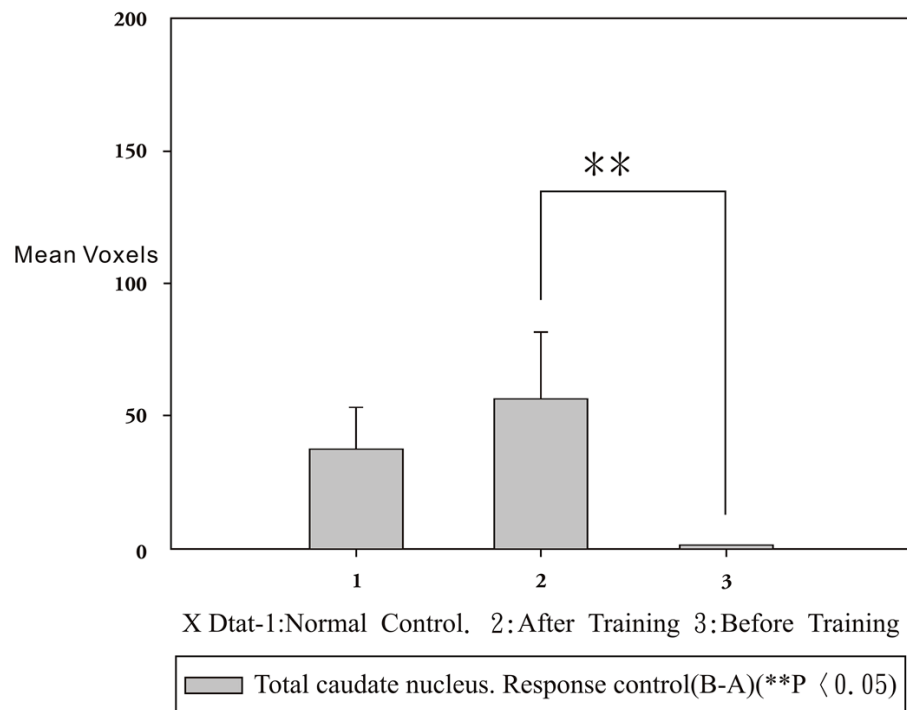


Figure 4.4. BOLD fMRI of total caudate nucleus in the three groups.

Discussion

During the BOLD fMRI examination, the subjects were required to keep the head and neck motionless for about 40 minutes, which is very difficult for younger pupils. Therefore, we selected students from the 4th, 5th, and 6th grades to participate in this examination. Statistical analysis of parental ratings of the SMI checklist and ADHD checklist and teachers' ratings indicated that parents and teachers made similar observations, and that training in the experimental group with SMI activities on a prone-extension posture resulted in significant improvement. Improvement in tactile defensiveness reached statistical significance.

The basic difficulties in tactile defensiveness are dis-inhibition of the central nervous systems (31-32). This frequently includes defensive over-sensitivity of eyes, ears, olfactory, taste, and touch sensations over the whole body, resulting in severe selection of food, short temper, poor socializing, attention deficit, continuing to talk within lecture, eyes drifting, and doing daily home work up to 3-4 hours per day, i.e. dis-tractability. These children have great difficulty in executing or completing a job or a task with full concentration. The difficulties of students with tactile defensiveness are characteristic of ADHD (23). Tactile Defensiveness may be resulted from dis-inhibition or insufficient activation of the pre-frontal lobes. This may explain why ADHD can be improved with intensive SMI training with prone extension activities.

The prefrontal region seems to be involved in the supporting representations of relevant information from interference due to competing information (3,14), whereas the basal ganglia seems to be involved in the inhibition of inappropriate behavior (4). Hypo-activation or decreasing BOLD-based activation was proved by response-control fMRI in students with ADHD before SMI training. Intensive SMI trainings with prone extension posture can improve BOLD-based activation in prefrontal regions correlated the findings for subjects with ADHD after SMI training.

The cingulate gyrus functions as an integral part of the limbic system, which is involved with emotional formation and processing, learning, memory and also executive control (13). The

improvement in these symptoms found in our ADHD subject after SMI training probably resulted from increased activation in these brain areas.

Response-control task of BOLD fMRI of children with ADHD prior to SMI training showed limited BOLD-based activation in the prefrontal regions, medial frontal regions, cingulate gyrus, and caudate nucleus. These findings support that caudate dysfunction and hypo-activity of frontal lobes are the primary brain manifestations of ADHD (24,26). This study of BOLD fMRI DATA in subjects with ADHD also showed reduced activity in the frontal-striatal region and decreased in blood flow to caudate nucleus which was correlated with impaired performance on a response controlled task.

Methylphenidate increased frontal-striatal activity and improved performance on response inhibition tasks for 3-4 hours after taking the medicine (27). In this study, after intensive SMI training in a prone extension posture for three months, persistent increase of BOLD-based activation was in the prefrontal area, medial frontal area, cingulate gyrus, and caudate nucleus in children with ADHD, and clinical observation showed this change was correlated with persistent improvement in behavior assessments in doing homework, full concentration in lecture, skillfulness in copying blackboard sentences, and better eye-hand coordination. The efficacy of SMI training to children with ADHD observed in this study was long and lasting in comparison to the short duration effects of Methylphenidate (27).

In contrast to other observations (25-26), no significant difference of BOLD-based activation in right and left hemisphere was observed in SMI training groups in both pre- and post-training BOLD fMRI studies, indicating improvement of activation was in both hemispheres. Follow up three months post training showed full concentration and attentiveness during class lectures, and improved BOLD-based activation in the same areas, indicating intensive SMI training on prone extension is an effective and long lasting treatment for children with ADHD.

Conclusions

BOLD based fMRI showed that the beneficial effects of SMI training with prone extension posture on

hyperactivity, impulsivity, and attention deficit of children with ADHD. Behavioral improvements in children with ADHD were associated with corresponding increases of BOLD-based activation in the prefrontal area, medial frontal area, cingulate gyrus and caudate nucleus. These effects of intensive SMI training were beneficial and long lasting for children with ADHD.

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Documenting effect in clinical holistic medicine using the case record: Development of a rating scale for therapeutic progress, version 1.0 based upon the holistic process theory of healing

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Abstract

We have developed the "Rating scale for therapeutic progress in clinical holistic medicine, Version 1.0" that can be used whenever there is a need to use the case record to evaluate if holistic therapy is efficient and to document healing in the patient. 17 questions on the patients progress in feeling, understanding and letting go of negative beliefs gives a score that indicates if healing is happening or not. The rating scale can be used for supervision, and to evaluate therapy when not completed because treatment is interrupted before completion, i.e. if the patient drops out. It can also be used to document effect of therapy, when others question the efficacy of holistic therapy for a specific patient. We recommend that a short questionnaire like QOL1, QOL5 or QOL10 is always used for quality assurance, as the qualitative assessment is much more complicated and time-demanding than the quantitative measuring of the quality of life and self-assessed physical and mental health before and after the treatment.

Keywords: Integrative medicine, alternative medicine, holistic medicine, CAM, qualitative research, holistic health, imagery, healing, therapeutic efficacy.

Introduction

The effect of holistic therapy can be measured quantitatively or assessed qualitatively (1-3). One can look at the outcome of therapy or at the process of healing in itself (4,5). While outcome is often hard to evaluate directly due to the chaotic nature of life, where happiness and good periods interchange with challenges and suffering, it is often much easier to see, if there is a positive development and if the patient is healing. According to many researchers, the good life is not a boring, stable state, but is happening

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on the edge of chaos, with intensive feelings and emotions, and sufficient challenges for personal development (6-16).

The case record or chart (17) is often used for qualitative evaluation of a patient's progress, but the many different dimensions of life and existence can make this a hard task to document. We have therefore developed this simple rating scale for documenting effect of holistic therapy using the case record. Some of the aspects, like the sexual life of the patient, might be missing from the case record, making the assessment incomplete. In spite of this, we believe that sufficiently many factors are addressed in most case records to make such an assessment possible. If the case record lacks data for more than 1/3 of the questions, the score is not valid.

Constructing the rating scale

According to the holistic process theory of healing (4), there are three steps in holistic, existential healing:

- (1) Feel
- (2) Understand
- (3) Let go

When it is needed to evaluate whether clinical holistic therapy actually helps a patients it is necessary to see if the therapy

- (1) supports the patient in feeling
- (2) supports the patient in reflecting and understanding his or her past
- (3) supports the patient to let go of negative beliefs and develop an independent, responsible and positive philosophy of life.

The signs of intensified feelings are:

- (1) Emotional expression
- (2) Patient report of more emotions, positive and/or negative
- (3) More emotionally motivated behavior
- (4) Less mental control
- (5) Enhanced sexuality – sexual interest, sexual activity (i.e. masturbation)

- (6) More interest in other people, or more feelings towards them, i.e. fear or anger

The signs of increased reflection and understanding are:

- (1) Expressed reflections and thoughts about all aspects of self, life and the surrounding world
- (2) Patient report on more reflections and understanding
- (3) Patient recalling personal history, especially emotionally charged life-events (traumas)
- (4) Patient constructing explanations and pseudo-memories (“implanted memories”) that leads to insight and understanding after more reflection (18)
- (5) Spontaneous regression, sometimes into psychotic events of childhood
- (6) Spiritual and transpersonal (i.e. divine) experiences
- (7) Old diseases (i.e. acne, eczema), neurotic patterns (i.e. social phobia) and gestalts (projections of parents on other people) re-manifest itself (compare with Heering's law (19-25))

The signs of letting go and development of a positive philosophy of life are:

- (1) Expressions of letting go and positive philosophy of life
- (2) Patient reports on letting go and noticing a more positive attitude towards self, life and/or other people
- (3) Patients engaging in activities that indicate a more positive, confident and trusting attitude.
- (4) The patient is becoming orgasmic potent (able to let go sexually) (26).

The rating scale

From the list of questions above it is a simple task to construct the rating scale with the questions needed to evaluate if the patient has been healing in the therapy:

Rating scale for therapeutic progress in clinical holistic medicine, Version 1.0

1: Yes	2: In doubt	3: No	4: No data
<i>A. Intensified feelings</i>			
Q1: Does the patient express feelings and emotions?			1 2 3 4
Q2: Does the patients report emotions, positive and/or negative?			1 2 3 4
Q3: Is there emotionally motivated behavior?			1 2 3 4
Q4: Are there less mental control in patient’s life, and more spontaneity?			1 2 3 4
Q5: Is there enhanced sexuality – sexual interest or sexual activity (i.e. masturbation)?			1 2 3 4
Q6: Is there more interest in other people, or more feelings towards them, i.e. fear or anger			1 2 3 4
<i>B. Increased reflection and understanding</i>			
Q7: Does the patient express reflections and thought about self, life and the surrounding world?			1 2 3 4
Q8: Does the patient report on reflections and understanding?			1 2 3 4
Q9: Is the patient recalling personal history, especially emotionally charged life-events (traumas)?			
Q10: Is the patient constructing explanations and pseudo-memories (“implanted memories”)?			1 2 3 4
Q11: Is there spontaneous regression, to i.e. psychotic childhood-events?			1 2 3 4
Q12: Does the patient have spiritual and transpersonal (i.e. divine) experiences?			1 2 3 4
Q13: Is there re-appearance of diseases from childhood or adolescence, (i.e. acne, eczema), or old neurotic patterns (i.e. social phobia), or projections of parents on other people?			1 2 3 4
<i>C: Letting go of negative attitudes and development of a positive philosophy of life</i>			
Q14: Does the patient express letting go or a positive philosophy of life?			1 2 3 4
Q15: Does the patient report of letting go or about developing a positive attitude towards self, life and/or other people?			1 2 3 4
Q16: Does the patients engaging in activities that indicate a positive, confident and trusting attitude?			1 2 3 4
Q17: Has the patient become less dysfunctional and happier sexually?			1 2 3 4

Scoring

“Yes” is scored as 1, “In doubt” as 0.5, and “No” as 0. No data is scored as “No”, that is as 0. If there is no data for more than five questions the score is not valid, and can only be taken as an indication. Interpretation of total score:

- 0-3: The patient is not healing
- 4-7: The patient is likely to heal
- 8-17: The patient is definitely healing

Using the rating scale

We have evaluated the therapy of “Anna” (27-29) with the rating scale and found the following:

1: Yes	2: In doubt	3: No	4: No data
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A. Intensified feelings

Q1: Does the patient express feelings and emotions?	1	
Q2: Does the patients report of emotions, positive and/or negative?		1
Q3: Is there emotionally motivated behavior?	1	
Q4: Are there less mental control in patient's life, and more spontaneity?		1
Q5: Is there enhanced sexuality – sexual interest or sexual activity (i.e. masturbation)?		1
Q6: Is there more interest in other people, or more feelings towards them, i.e. fear or anger		1

B. Increased reflection and understanding

Q7: Does the patient express reflections and thought about self, life and the surrounding world?		1
Q8: Does the patient report on reflections and understanding?	1	
Q9: Is the patient recalling personal history, especially emotionally charged life-events (traumas)?		
Q10: Is the patient constructing explanations and pseudo-memories (“implanted memories”)?		3
Q11: Is there spontaneous regression, to i.e. psychotic childhood-events?		1
Q12: Does the patient have spiritual and transpersonal (i.e. divine) experiences?		3
Q13: Is there re-appearance of diseases from childhood or adolescence, (i.e. acne, eczema), or old neurotic patterns (i.e. social phobia), or projections of parents on other people?		1

C: Letting go of negative attitudes and development of a positive philosophy of life

Q14: Does the patient express letting go or a positive philosophy of life?	1	
Q15: Does the patient report of letting go or about developing a positive attitude towards self, life and/or other people?		1
Q16: Does the patients engaging in activities that indicate a positive, confident and trusting attitude?		1
Q17: Has the patient become less dysfunctional and happier sexually?		4

The score is thus 14; only one “No” from missing data allows us to conclude that the patient is healing. This is a simple example of how to extract the knowledge about the healing from a highly complex case record, demonstrating the usefulness of the tool.

Discussion

The therapist and the patient most often know if there is progress in the therapy. For the therapist the state of healing is associated with a special feeling of the earth moving, and for the patient healing is often a strong

and not-always-pleasant experience. We could say that it is known by *intuition*. Unfortunately it is easy to be caught in illusions as therapist, so it is important that we have tools for evaluating the effect of therapy, also when the therapy is made by another therapist, whom we supervise, when the patient drops out half the way though the treatment, or when the therapy is questioned by authorities or other professionals. We believe that the presented questionnaire is valuable in these situations.

The rating scale is valid as it is firmly based on theory, which is the most solid way to validate a questionnaire (30). In principle it could be validated

by comparing results from the qualitative evaluation with results from quantitative measuring, but this has yet to be done. We believe that this is not necessary for taking the scale into use. We have used it for supervision, and found that it is practical and valuable. When it comes to tools for qualitative research and evaluation the qualities validation is always more important than a quantitative. We therefore find the questionnaire sufficiently validated.

We have developed the “rating scale for therapeutic progress in clinical holistic medicine, Version 1.0” that can be used whenever there is a need to use the case record to evaluate and also document if holistic therapy is efficient and the patient healing. 17 questions on the patient’s progress in feeling, understanding and letting go of negative beliefs gives a score that indicates, if healing is happening or not.

The rating scale can be used for supervision, to evaluate therapy when not completed, because treatment is interrupted before completion, i.e. if the patient drops out. It can also be used to document effect of therapy, when the authorities or other professionals have questioned the efficacy of holistic therapy for a specific patient. We recommend that a short questionnaire like QOL1, QOL5 (2) or QOL10 (3) is always used as quality assurance, as the qualitative assessment is much more complicated and time-demanding than the quantitative measuring of the quality of life and self-assessed physical and mental health before and after the treatment.

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The effect of colored illumination on breathing rate and cardiorespiratory dynamics

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Abstract

In 2006 we published results on the effect of colored illumination on the heart rate variability (HRV) of 12 healthy volunteers (colors of the fluorescent light tubes: red, green, and blue). Then, in 2008 we described two new methods that estimate average breathing rates from HRV via respiratory sinus arrhythmia (RSA) sufficiently well: Count-adv and ACF-adv. The HRV recordings made during our experiments with colored light are re-analyzed. We determine average breathing rates, besides mean heart rates and the ratio of the two quantities, the heart-breath quotient. The three best methods to quantify breathing rates are used: Count-orig (old) as well as Count-adv and ACF-adv (new). Significant results show that the subjects were mostly breathing at faster rates during red and green illumination. On the other hand, blue light induced a narrower distribution of the heart-breath quotient; probably around a value of 4, which is characteristic of states of relaxation. These results are consistent with our earlier findings, suggesting that short wavelengths of visible light has a different physiological effect compared to those in the range from red to green.

Keywords: Heart rate variability (HRV), respiratory sinus arrhythmia (RSA), breathing rate, heart-breath quotient, light therapy, color.

Introduction

The physiological effect of bright artificial fluorescent light with a spectrum similar to daylight (*light therapy*), particularly in the therapy of seasonal affective disorder (SAD), has been a focus of intensive research (1). In spite of this, neither the physiological mechanisms of action involved (2), nor the therapeutic effects of the various parts of daylight spectrum or “colors” (3), have been fully clarified yet. Information about ambient illumination is also directed to many brain areas regulating the

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autonomous nervous system and the cardiovascular system. These facts were our motivation to investigate the effect of colored illumination on heart rate variability variables, results published earlier (4).

Heart rate variability (HRV) has been a clinical tool for the diagnosis of the cardiovascular system for many years (5). It is measured by recording a time series of the temporal length of consecutive heart cycles – i.e. generally of NN intervals (‘RR intervals’), as they appear in an electrocardiogram (ECG). HRV can be analyzed in various ways, yielding time-domain, frequency-domain and non-linear variables. HRV variables permit conclusions about the ability of the organism to regulate and the control of cardiovascular activity by the autonomous nervous system (6).

Respiratory sinus arrhythmia (RSA) usually is the fastest varying component of HRV (7,8), predominantly mediated by parasympathetic activity. In healthy individuals at rest, NN interval lengths become shorter during inspiration and longer during expiration. In young subjects, RSA causes comparatively prominent oscillations of NN interval lengths paralleling respiratory activity. We recently published a comparative study on methods to determine respiratory frequency from RSA without using a separately recorded respiration signal (9). Results show that average breathing rates can be estimated rather well for comparatively young subjects at rest when HRV recordings are somewhat longer than 1 min. Our HRV data on colored illumination satisfies these criteria (see below) and this encouraged us to reinvestigate these measurements in order to

- check the applicability of the RSA based methods to determine breathing rates for a practical study, and
- test for a possible effect of colored illumination on respiration.

For quite a while, cardiorespiratory interaction and synchronization has been a focus of attention (10,11) and this motivated us to inspect the heart-breath quotient of the subjects (i.e. the quotient of their mean heart and breathing rate) as well.

Methods

The source of light used for the study consisted of a light box with four colored fluorescent light tubes made flicker-free electronically. In analogy to the three different types of cones in the human retina we used the following three colors and types of tubes (produced by OSRAMTM, Munich, Germany): Red light of type L36/W60, Green light of type L36/W66 and Blue light of type L36/W67.

12 healthy volunteers (seven female and five male, aged 24-37 years) enrolled in the study and gave informed consent. Experiments took place after 21:00 (9 pm), at experimental days participants were instructed to avoid a) caloric intake after 19:00 (7 pm), b) coffee after 16:00 (4 pm) and c) alcoholic beverages all day. Each person participated in three experiments, one type of color used in each experiment. After a period of 15 min of darkness the persons were exposed to colored illumination of 700 lux for 10 min, followed by another 15 min of darkness. The subjects were instructed to avoid looking directly into the illuminated light tubes for longer than 1–2 seconds. In the last approximately 3 min of each period a HRV time series consisting of 180 consecutive NN intervals was recorded. Figure 1 summarizes this experimental schedule. It also displays short names for the HRV recording times that will be used in the “results” section:

Short name	HRV series recorded during the last minutes of ...
<i>‘before’</i>	the darkness period preceding illumination
<i>‘light’</i>	the illumination period
<i>‘after’</i>	the darkness period following illumination

HRV measurement was made by a Cardiotest module produced by proQuantTM (Chur, Switzerland), which evaluates the ECG at a sampling rate of 6 kHz. After application of the ECG electrodes the test persons were dressed normally and sitting in a comfortable chair. For further details refer to our original article (4).

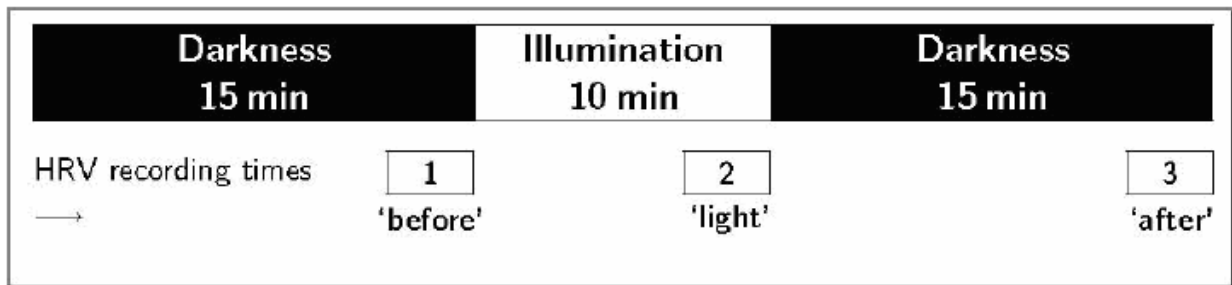


Figure 1. Experimental schedule of illumination conditions and HRV measurements

Analysis of breathing rate

We have described and tested several techniques to determine an average breathing rate from the RSA of a HRV series in (9). For evaluation here, we use the three methods that yielded the best results in that study, which we have termed *Count-adv*, *Count-orig* and *ACF-adv*. All methods yield good estimates of respiratory rates, when applied to HRV series somewhat longer than 1 min recorded from young subjects at rest, as it is the case here. In the following the three methods are described in brief.

Count-orig and Count-adv

For both counting methods we filter the spline-interpolated HRV series by a Butterworth filter of 10th degree with a pass band of 0.1–0.5 Hz or 6–30 min^{-1} , the region relevant to spontaneous respiration, and then search the local maxima and minima of the filtered curve. The original method *Count-orig* (12) then continues with the following steps: Take the 3rd quartile (75th percentile) Q_3 of all local maximum ordinate values, to suppress the influence of extraordinarily large breaths. Then define $0.2 \times Q_3$ as a threshold level for valid maxima.

Every part of the signal between two such maxima above $0.2 \times Q_3$ is interpreted as a valid respiratory cycle, if it contains exactly only one minimum below zero, but no other local extrema.

Our own advanced method *Count-adv* proceeds somewhat differently: Calculate the vertical differences of subsequent local extrema and take their absolute values. Then determine the 3rd quartile \hat{Q}_3 of these to define a threshold value of $0.1 \times \hat{Q}_3$.

Beginning with the pair separated by the smallest (absolute) difference, we remove all pairs of subsequent extrema, which have vertical distances smaller than the threshold value. The remaining series of minima and maxima are thought to originate all from breathing activity in our model.

In both cases, the mean breathing rate B is then taken as the reciprocal average length of all detected respiratory cycles.

ACF-adv

For a time series of NN intervals NN_i ($i = 1, \dots, N$), this method proceeds as follows:

1. Take the differences $\Delta NN_i = NN_{i+1} - NN_i$ ($i = 1, \dots, N-1$) of subsequent intervals, which largely removes any HRV fluctuations slower than RSA.
2. Form the autocorrelation function (ACF) of the ΔNN_i

$$ACF(\tau) = [1/(N-\tau)] \times \sum_{i=1}^{N-\tau} \Delta NN_i \times \Delta NN_{i+\tau}$$

$$(\tau = 1, \dots, N/2) \quad (1)$$

to get a more regular RSA oscillation.

3. We investigate the power spectrum of the ACF in the range of 6–30 min^{-1} , within which we regard all spectral components greater than the median of spectral power of the frequency band. The mean respiratory rate B is taken as the mean frequency of these

components, where frequencies are weighted with their respective spectral power.

For a detailed description of all three methods see ref. (9).

Evaluation of heart and breathing rates

We found that all procedures described above overestimate the true breathing rate in some cases and underestimate it in others. In order to obtain maximum reliability and to avoid outliers, we did not use their results directly, but rather used the arithmetic mean of all 3 methods as an approximation of the true breathing rate B.

In addition, we determined other measures of interest in the context of interactions of the cardiovascular and respiratory system:

- Mean heart rate H, i.e. the reciprocal of the mean NN interval length. Like the breathing rate we will give it in min^{-1} .
- A heart-breath quotient (Q_{HB}) which is simply $Q_{\text{HB}} = H/B$. The quotient Q_{HB} is a popular measure in chronobiological studies. In relaxed states and deep sleep it is reported to approach a value of 4, and sometimes $Q_{\text{HB}} \approx 4$ is regarded as ideal for relaxation and regeneration. During daytime or activity, however, one finds deviating results; the typical values in this case vary widely (about 2 to 10) among individuals (13,14).
- The latter property suggests to evaluate also the absolute deviation of Q_{HB} from the assumed relaxed value of 4, i.e. $|Q_{\text{HB}} - 4|$.

Statistical analysis

In order to quantify the effect of a certain type of light on H, B or Q_{HB} , we focused on the changes of their values when comparing illumination and darkness. As null hypotheses served the statements “light of color C does not have any systematic influence on measure X”.

In a typical sample of healthy younger adults, values for H, B and Q_{HB} show a relatively wide distribution, while the values of a single individual under the various experimental conditions are scattered more narrowly. Since all experiments yielded HRV measurements under the conditions ‘before’, ‘light’ and ‘after’ for each person, this suggests to analyze the significance of the changes by paired t-tests between two of all three conditions in comparison, respectively – see the following section and table 1.

Results

Individual results for all subjects are displayed in figure 2. Considering the plots one can suspect that illumination conditions did not have a peculiar influence on the average heart rate H. However, estimated breathing rates B typically seem to increase under the influence of red and green lights, which is consistently paralleled by a decrease of the heart-breath quotient Q_{HB} . Apparently blue light did not induce such a uniform change, but we notice that the distribution of Q_{HB} becomes narrower during blue illumination.

We complement these observations by the results of the statistical evaluation, which are summarized in table 1. The respective p-values for the comparison *light* vs. *before* suggest that B indeed rises during red and green illumination. The increase is more prominent and more significant during green light ($12.2 \rightarrow 14.3 \text{ min}^{-1}$, $p=0.009$) compared to red light ($13.4 \rightarrow 14.7 \text{ min}^{-1}$, $p=0.015$). The corresponding declines of Q_{HB} values are almost equally significant during green illumination ($p=0.013$), but weaker in the case of red light ($p=0.081$).

The respective results for the comparisons *after* vs. *light* indicate that the changes during illumination were mostly reverted in the course of the subsequent darkness period. Correspondingly, paired t-tests between *after* and *before* were all insignificant, if we ignore a weak $p=0.08$ for red light of the otherwise inconspicuous H.

Table 1. Results for average heart and breathing rates under the various experimental illumination conditions and significance of paired t-tests

Color <i>Evaluated measures</i>	Mean \pm standard deviation			Significance of change		
	<i>before</i>	<i>light</i>	<i>after</i>	<i>light vs. before</i>	<i>after vs. light</i>	<i>after vs. before</i>
Red						
H [min^{-1}]	66.6 \pm 8.2	66.5 \pm 10.0	64.9 \pm 8.8	–	–	*
B [min^{-1}]	13.4 \pm 3.4	14.7 \pm 3.7	13.0 \pm 3.6	††	†	–
Q_{HB}	5.3 \pm 1.8	4.7 \pm 1.2	5.4 \pm 1.8	*	†	–
$ Q_{\text{HB}} - 4 $	1.4 \pm 1.8	1.1 \pm 0.9	1.8 \pm 1.4	–	†	–
Green						
H [min^{-1}]	67.8 \pm 8.9	67.6 \pm 8.4	66.6 \pm 9.7	–	–	–
B [min^{-1}]	12.2 \pm 2.6	14.3 \pm 3.3	13.1 \pm 3.0	†††	†††	–
Q_{HB}	5.8 \pm 1.5	4.9 \pm 1.3	5.3 \pm 1.5	††	*	–
$ Q_{\text{HB}} - 4 $	1.9 \pm 1.4	1.2 \pm 1.0	1.5 \pm 1.2	†	–	–
Blue						
H [min^{-1}]	65.9 \pm 10.2	64.7 \pm 9.5	66.3 \pm 10.0	–	*	–
B [min^{-1}]	13.1 \pm 3.1	13.7 \pm 2.6	12.8 \pm 3.0	–	–	–
Q_{HB}	5.3 \pm 1.6	4.9 \pm 1.1	5.5 \pm 1.9	–	*	–
$ Q_{\text{HB}} - 4 $	1.6 \pm 1.3	1.0 \pm 0.9	1.8 \pm 1.7	†††	††	–
* $p < 0.1$, † $p < 0.05$, †† $p < 0.02$, ††† $p < 0.01$ H = heart rate, B = breathing rate, $Q_{\text{HB}} = H/B$ (heart-breath quotient)						

These findings represent an absence of hysteresis effects, i.e. the effects of 10 min of colored illumination were not persistent enough to outlast the following 15 min of darkness. This may differ after longer periods of exposition to bright light.

During blue illumination, the only noticeable quantity is $|Q_{\text{HB}} - 4|$ showing a significant decrease, supporting our first impression that Q_{HB} is more narrowly distributed during blue light. The findings also indicate an absence of hysteresis for this effect. Changes of the other variables, however, are rather insignificant.

For H there are no peculiarities for any type of color, apart from two weak tendencies of both $p = 0.08$ between *after vs. blue light* and *after vs. before red light*. From this we can infer that, during red and green (but not during blue) illumination, changes of Q_{HB} occurred mainly due to a different breathing activity of the test persons.

Discussion

Since a relevant part of the null hypotheses for *after vs. light* need to be rejected, we conclude that colored illumination of a duration as short as 10 min can influence respiratory activity or cardiorespiratory interaction. Considering the therapeutic effectiveness of breathing techniques in some cases, one may wonder whether unconsciously modified breathing patterns contribute to the beneficial effects of light therapy. The absence of hysteresis suggests that 10 min of colored illumination are not sufficient to arouse any permanent effects, which is in agreement with most studies on light therapy.

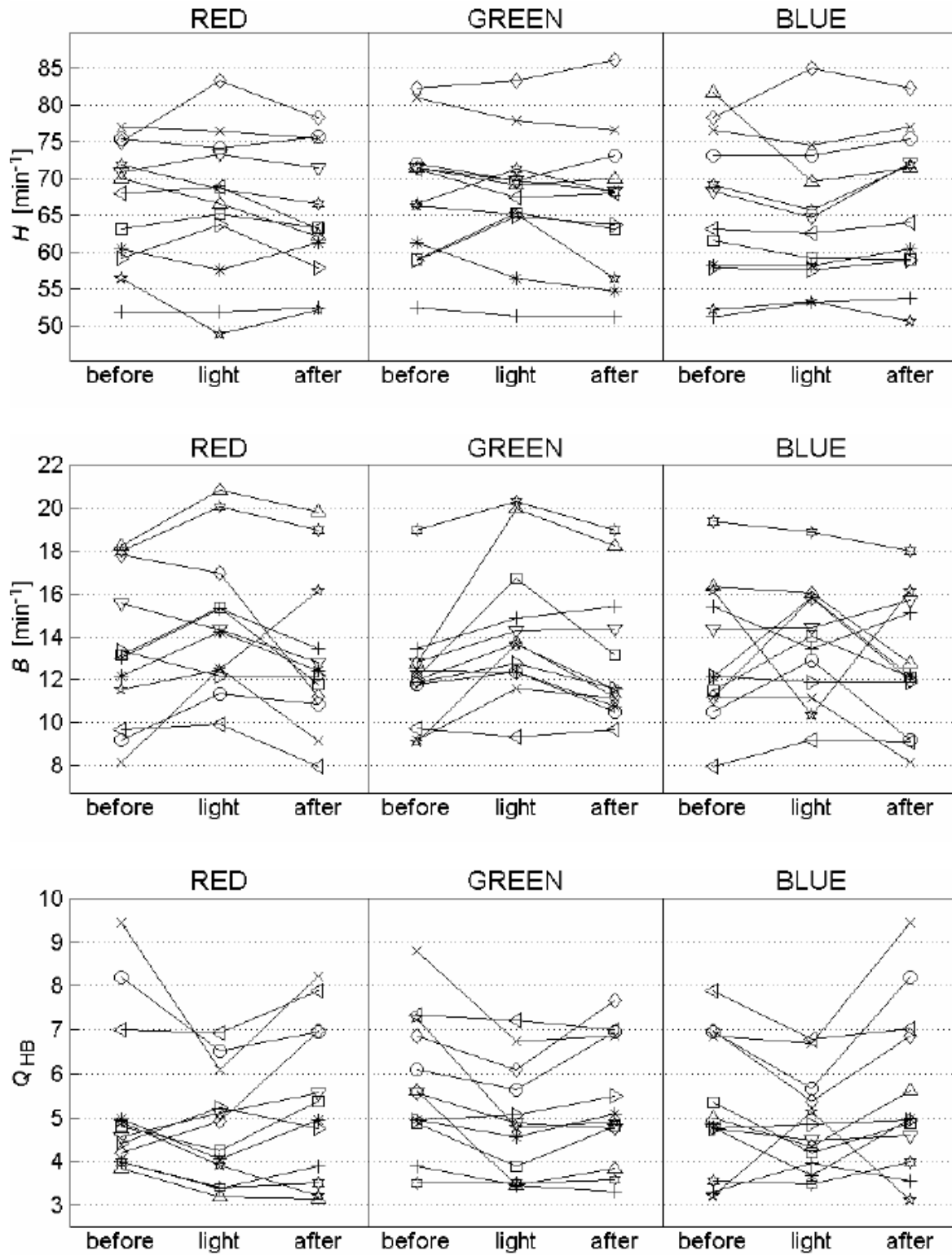


Figure 2. Individual results for heart rate H , breathing rate B , and $Q_{HB} = H/B$. Each individual is represented by the same type of marker, respectively.

In our original HRV analysis of the experiments we found significant results for the overall spectral distribution of HRV (4): Red and green lights induced a spectral shift towards very low or low frequencies (VLF and LF), which can be interpreted as an increase of sympathetic modulation of HRV. On the other hand, the high frequencies (HF) became more prominent during blue illumination, indicating a stronger influence of parasympathetic control. From these observations one can also infer that RSA oscillations – which primarily contribute to higher frequencies – were intensified by blue light, while red and green seem to reduce their amplitude (but increase their frequency, according to our new results).

Our findings here parallel these HRV results insofar, as the results for blue light are somewhat different from those for the two other colors. During blue illumination, Q_{HB} distribution narrows around a value of 4, suggesting a state of deeper relaxation — which is consistent with increased parasympathetic regulation. The behavior of Q_{HB} itself and B was inconspicuous. In contrast to this, Q_{HB} distribution around 4 does not play such an important role in the case of red and green light, while average breathing rates of the subjects then generally increased.

The personal experiences of the subjects are interesting in this context. Many reported a stimulating effect of red and particularly of green light, while blue light seemed to induce a kind of wakeful but relaxed state. These impressions are consistent with most of our findings.

We would like to add some remarks about the photoreceptors of the three types of cones in the human retina. The curves of spectral sensitivity for the red and green cones overlap partially – actually the spectral maximum of the ‘red’ cones is found in the yellow range – which may explain the similarity of results for red and green light. The sensitivity of blue cones, on the other hand, is located more separate from the other two and more concentrated around their “proper” color.

Considering all this, short wavelengths of visible light may have a different physiological effect compared to those in the range from green to red. Some studies on the influence of different types of light on SAD patients report full spectrum light including blue tones as fundamental for the thera-

peutic effect (3). Our findings support this point of view and speak for more balanced effects of full-spectrum light. In contrast, standard artificial light with its lack of short wavelengths in the blue domain may represent some kind of imbalance.

Most frequently, light therapy is used for the treatment of SAD, a depressive illness occurring during seasons when sunlight is sparse. Our experiments were performed after 9 p.m. during early winter months in Central Europe, i.e. about 5 h after the end of dim and short daylight periods, since we expected the influence of illumination on cardiorespiratory regulation to be stronger then. However, one may expect deviating experimental results at different circadian or seasonal phases.

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