

Mindfulness Based Interventions for End of Life Care: A Review

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Abstract: Mindfulness Based Intervention (MBI.) is found in the practices of all beliefs, religions and cultures. The various styles can be divided in to 4 patterns: mindful breathing, mind-body, body scan guided image. Body healing mechanisms can be divided into the following groups, changes in neurotransmitters autonomous nervous system endocrine and immune system. With these mechanisms, we can reduce the sufferings of patients who are near the end of life stages such as dyspnea, pain, fear and anxiety. For patients who have limited body movements the following 6 steps are recommended, to accept their illness, to accept their deaths, to accept and sooth their inner emotions and thoughts, to be aware of what their bodies are going through, to be aware of one's own breathing, to converse with the whole body. The MBI. should be applied in the treatment process for patients near the end of their lives, especially upon admission at the hospital and it should be applied to those with chronic diseases. There are problems where conventional treatments do not receive do any response, e.g., SLE., HIV., emotion instability and bipolar disorder.

Key words: Mindfulness end of life awareness, movement, practices, immune system, divided, nervous system

INTRODUCTION

The meaning of "Mindfulness" is to be full of consciousness to perceive the whole concept of the body, emotion, thought, place in present, most commonly defined as the awareness that emerges through paying attention to the purpose of life in the present moment (Kabat-Zinn, 2013). In a state of mindfulness or full of consciousness, the perception between our inner and external worlds will radically change. The phenomenon is called "intuition" or "wisdom".

Mindfulness practice transcends all religions and culture (Delgado-Guay *et al.*, 2013). There are several standardized programs but there is no information or research to determine which is the best. The successful mindfulness is practice based on two principles: there are many methods in which the practitioner can use and he/she is free to utilize which ever method suits him/her best. Upon determining on a specific method, the practitioner should continue using it throughout the process and not deviate from the original method.

The concept of holistic health consists of physical, mental, spiritual and social well-being. Today our health problems are complex. Mindfulness plays an important role in our health, especially interminally-ill patients where by conventional medicine cannot cure the patient's illnesses or restore their health to normal. The caring for the good or peaceful death of patients is very important. This study aims to point out the importance of mindfulness and inspiration applied to the palliative patient.

Principles of mindfulness base practice: The principle of mindfulness practice is very simple. There are four guiding principles (Kabat-Zinn, 2013). They are as follow:

Non-judging: Mind training is not biased. Patients are encouraged not to be too positive or negative. The aim of practice is accept the nature of self and others, even though it may be a bad thing in your mind. The practice must be carried out regularly to see your inner mind about thoughts, feelings, expectations in life. Set aside 5-10 min a day to observe yourself.

Patience: Most failures in mindfulness practice are caused by high expectations within a brief period. When it is not up to expectations, most people are often discouraged. This process requires regular training as well.

Beginner's mind: Practice is simple in everyday life such as smiling, greeting, being sincere with others, observing their own emotions while driving and when they see others conducting themselves in an inappropriate manner.

Trust: It means to have self-confidence in our own potential. Be ready to know the values of both yourself and others. The pattern of mindfulness practice is varied. It can be divided into four types as follow:

- Mindful breathing: observe fully your breathing (in and out) without saying anything
- Body scan: observe fully the sensations in your body

- Mind-body: observe fully thoughts or feelings until the body movement together
- Guided imagery: observe fully and focus on the image that emerges during meditation

However, all the various patterns of mindfulness practice can be combined with the platforms of tai chi, yoga or qi gong (Duncan *et al.*, 2017). Beginning with mindful breathing, fully observe the body sensations that are most common in the standing position. Fast or slow body movements depend on their feeling (mind-body). Pay attention the image that emerges during the body movements. Finally, body movements will form freely and this feeling will give you freedom with full awareness.

MATERIALS AND METHODS

Stress effect on health: Inconventional health care, perspectives are separated into physical and mental illnesses. Usually when patients with headaches are concerned that their problems are neurological, they will consult a neurology specialist. If patients have sleep problems, they will consult psychologists and may get prescriptions for tranquilizers or anti-depressants. But most patients never observe their body reactions until their have anger or sleeplessness problems.

Long-term use of the brain for logic view utilizes only some parts of the brain and produces only beta-waves. In the beta-wave stage, other brain functions such as emotion, imagination and communication skills are unbalanced (Caprara and Steca, 2005; Fjorback *et al.*, 2011). It can explain why people who work or live with logic dominantly look successful but also have problems when balancing their emotional expressions. Their emotions can sometimes be uncontrollable and sometime suppressed. Such people also have problems in communication and relationships (Vespa *et al.*, 2018).

The physiological factors are relative between stress, anxiety, hormones and the autonomic system (Hoffman *et al.*, 2012). In stressful situations, the body will produce a high level of cortisol. The sympathetic system is over-worked and affects all the other organs such as tachycardia, vasoconstriction, increases blood pressure but decreases blood circulation to cardiac muscles, decreases appetite, decreases bowel movement but increases acid products in the stomach. The renal will reabsorb water, the number of white blood cells will increase. Inflammation cytokines will produce symptoms of inflammation, allergy or autoimmune disorders (Robinson *et al.*, 2003).

Under stressful conditions, like after getting a knock-out punch, we will go to sleep, due to burn out or exhaustion, rather than sleeping for relaxation. But it is not

really relaxing because while sleeping under stressful condition, the subconscious of our minds continue to work. The negative emotions that occur naturally are not recognized by the body because the brain recognizes only logical thinking. The physiological stress continues to effect the whole body by changing neurotransmitters the endocrine system and the immune system (Black and Slavich, 2016). The balance of body and mind is very critical during sleep. The body cannot sleep or may sleep with nightmares or stay awake throughout the night if the mind is under stress. It is a symptom of insomnia.

The cycle of insomnia and stress is a mind-body model (Hofmann *et al.*, 2010). The body, from the cell to the organ systems are connected with the mind, the family and the society. Specific treatments are beneficial in acute illnesses or accidental illnesses. For example in case of acute coronary infarction, the patient must have vascular dilatation intervention, rather than taking organic food, vitamins or meditation. But specific caring for only some parts of the body is limited and poor performance for chronic illness, especially for the terminally-ill patients and their families. The conditions of these patients, mindfulness practice will play an important role in health promotion, prevention and rehabilitation.

How important is mindfulness practice in the health remedy?:

Jon Kabat-Zinn from Department of Preventive Medicine and Behavioral Therapy, Medical Center University of Massachusetts is the first pioneer physician to apply mindfulness to treat patients by creating the Mindfulness-Based Stress Reduction program (MBSR). Mindfulness practice in a Buddhist way starts by lying on the bed for 45 min and then focuses the mind on the positions of the body (Kabat-Zinn, 2013). The benefits of such a practice for 30 min equals 3-4 h of deep sleep. This practice helps to rejuvenate and enhance performance in the day. Illness with chronic pain that require pain killers for a long time such as migraine headaches, facial nerve pain, chronic back pain and chronic neck pain. After 10 weeks of continuous mindfulness training in this program, the pain score was reduced by 50-65%, the dosage for pain killers was reduced and patients slept well (Duncan *et al.*, 2017; Latorraca *et al.*, 2017). For elderly patients, the study also found that mindfulness reduced stress and depression, improved well-beings and mortality was reduced. MBSR works not only with patients it also works with medical staff, residents and medical students. The trainee have reduced tension, less depression they feel more peaceful and compassionate. Trainees can also, listen to patients with greater empathy. The three mechanisms for mindfulness to take effect are as follows:

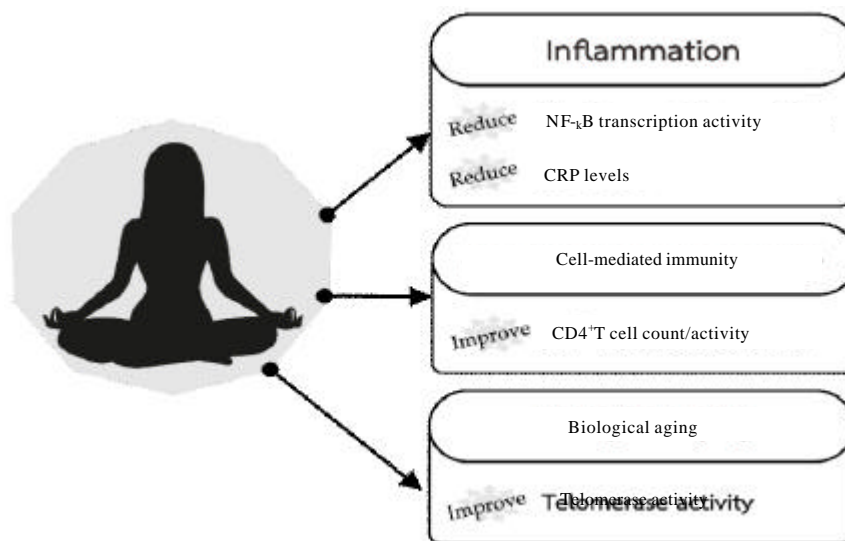


Fig. 1: Association of immune system and meditation

Neurotransmitter: The state of being in the present. Neurotransmitters such as Dopamine, Serotonin and Endorphin bring us happiness when released (Hofmann *et al.*, 2010; Vespa *et al.*, 2018). It means that when people practice mindfulness regularly they produce a cycle of joy in their own brains. Brain functions in part of imaging, aesthetics, appreciation, emotional, communication skill will resume. Internal communication with one self and external communication with others is more effective, then whole organs of the body will adapt and change to the conditions of happiness.

Sympathetic-parasympathetic nervous systems: When the body is in a relaxed state, the parasympathetic nervous systems changes the whole body parts of voluntary muscles reduce tension and fatigue, blood vessels will dilate, the heart beat will slow down but the coronary circulation will be more efficient, blood pressure is reduced, smooth muscle organs such as the stomach and bowel produce effective movements, peristalsis movement return to normal and the digestion and defecation are effective.

Endocrine and immune systems: In the mindfulness stage, both the innate and adaptive immune systems (Black and Slavich, 2016; Robinson *et al.*, 2003) especially T-cell, NK-cell work effectively. There are reduced symptoms of allergy and symptoms associated with autoimmune disease. Improved immunoglobulin of various types such as IgG, IgA, IgM, IgE, it can prevent the virus infection in the respiratory tract, urinary tract without vaccination. Also found is the telomere length as associated with meditation (Price *et al.*, 2013;

Schutte and Malouff, 2017). People who practice meditation regularly have longer lengths of telomeres and improved cell repair systems. While cancer patients have shortened lengths of telomeres as shown in Fig. 1.

Illness at end of life stage: As patients are at the last stages of their lives, they experience physical, psychological and spiritual illnesses. In addition, the illness also affects the others, not only medical personnel but also care giver and their relatives (Bonavita *et al.*, 2018; Delgado-Guay, 2013). In this study, we review only common individual illnesses that occur.

Dyspnea and abnormal bowel movements: Dyspnea is the most common symptom in end stages of palliative patients (Duncan *et al.*, 2017). They have pathology that is related to respiration in the chest wall and also in the abdominal wall. The most common medicines used are the opioid group. The nervous system associated with respiratory functions is a mixture of autonomous nervous system and voluntary nervous system.

Patients with abdominal pathology often experience abnormal bowel movements that include dyspepsia, constipation, frequent stool, abdominal cramps or abdominal lumps. But the use of opioid drugs can cause common side effects like constipation and dyspepsia. It is well known that the gastro-intestinal system is mainly a smooth muscle which is controlled by the autonomic nervous system.

The autonomous nervous system does not control our thoughts but is directly related to emotions known as “suffering”. Many countries are attempting to use opium and marijuana to treat cancer patients.

Pain symptoms: The pain symptoms may be due to the direct cause of pathological changes in organs and physiological-related illness. The pain is divided into 3 main categories; Somatic pain, visceral pain and neuropathic pain. Medications used for treatment vary according to the types of pain. For example, for somatic pain or visceral pain, the main pain control drugs are the opioid groups. But for neuropathic pain, the main drugs for pain control are anti-depressants or anti-convulsant or steroid groups. However, in some cases where patients at the end stages of their lives will have mixed pain it is necessary to use more than one medical groups or alternative treatment to control pains (Krikorian and Limonero, 2012).

Mental or psychological pain: Mental pain may be expressed in two patterns. They are: mood disorder which are anger, sadness and fear. Physical illness unrelated with pathology is called "somatization". All forms of mental pain can be referred to as suffering. In addition, mental pain or suffering can increase the entire symptoms and severity in physical pain and then it turns to chronic pain (Krikorian and Limonero, 2012).

Fear and anxiety: Fear is often related to an uncertain future. For patients at the end stages of their lives in physical aspect is lost future and unpredictable. For somebody who has faith in the life after death, the fear can be very immense. Depending on the death perspective of patients, sometimes the patients may not express their fears directly.

While anxiety is connected to the past and mixed with the future such as caring for our loved ones, concerns about property, concerns about the business or job that they feel connected to, the feeling is known as "Unfinished Business" (Hasegawa *et al.*, 2017; Krikorian and Limonero, 2012).

It is confirmed that in all types of symptoms of illnesses, both physical and mental are "suffering". In addition, according to the spirituality of many religions, it is believed that suffering causes unpeaceful death. Mindfulness will give the opportunity for patients to stay in the present moment, not in the past or future. They have the opportunity to know the mental suffering mind and practice to face suffering and learn how to live with suffering.

Mindfulness practice guidelines for end-of-life patients:

Our introduction has indicated that mindfulness practice can be done in several ways. The only one goal is perception and concentration in the present moment. For common people who are not sick, mindfulness practice may need a lot of efforts and exertion. Their bodies have

freedom of movement, giving their brain functions many thoughts. Their minds have many needs for life and have to do many things every day.

The Study has shown that a person has more than 10,000 ideas a day (Williams and Penman, 2011). Patients at the last stages of their lives can utilize their illnesses which is very powerful to use for mindfulness practice. In the Mahayana Buddhist conceptual, it is always said use the illness as a tool for spiritual training". But these patients often have problems with movement. The appropriate 6 types of mindfulness practice are as follows:

- Acceptance of own illness
- Acceptance of the imminent death
- Acceptance emotions and thoughts of the moment
- Mindful breathing practice
- Body sensation practice
- Body inner voice sensation

Acceptance of own illness: While patients perceive the process of their own death they have five processes of Kubler-Ross (1997) which include: denial, anger, bargaining, depression and acceptance. While acceptance is the last process but it is also, the beginning and it is a very important point for patients to return to their own conditions. Plus, acceptance is the starting point for patients to learn how to deal with uncontrolled factors of the body, emotion and mind variance.

Acceptance of the imminent death: When the patient has accepted that the disease is incurable, the patient needs to accept the imminent death as the end of life. In this process, some patients can revert to the denial stage of the illness and death again. A parallel approach to get patients to a state of accepting both illness and death is the acceptance of their own emotions and thoughts for the moment.

Acceptance of emotions and thoughts for the moment: In the stage of denial, anger, bargaining, depression are symptoms of our emotions. At this stage, the acceptance of all these emotions is the first and most important stage. Because patients often do not recognize their own emotions. Moreover, some emotions are recognized as negative values in social perspective are called "the negative emotions" and must be quickly eliminated or controlled. So, when patients express anger or sadness, the caregiver, relative or the physician is in a hurry to give several medications to control the mood such as anti-depressant or anti-anxiety medicine. These are all methods to neglect or suppress emotions of the patient, relative, caregiver and physician.

The duty of caregivers at all levels should be to accept and promote patient's ability to recognize and make them feel free to express their emotions and thoughts, no denial

to anger, no denial to depress. Eventually, accepting the condition of illness and death and acknowledging that emotions of denial, anger, bargaining, depression and anxiety can emerge at any time.

Mindful breathing practice: Breathing practice has been around for thousands of years it is a famous practice of yoga, meditation and tai-chi practice. There are also, various breathing techniques (Kabat-Zinn, 2013; Williams and Penman, 2011; Ng *et al.*, 2016). For end-stage patients, the most appropriate meditation pattern is concentration in breathing at the tip of the nose and it is unnecessary to pray. However, if the patient needs to pray, they should do so according to their religious beliefs before he/she begins to practice breathing. There are also, studies supporting praying before meditation because it can help induce brain waves from the beta to the delta waves.

Body sensation practice: Body sensation (Kabat-Zinn, 2013; Williams and Penman, 2011; Ng *et al.*, 2016) is a meditation practice similar to breathing sensation practice. It changes from breathing sensation to sensation of body which can start in any part of the body. The most common/popular position is the supine position. Start by closing your eyes then practice feeling on the toes on both feet and concentrate moving the sensations to other parts of the body. This will take about 30 min. If the body feels tight or painful, the patient can focus the sensation longer on other body parts. It can relieve the pain or discomfort in that area. It also, combines breathing practice with body sensation practice such as perceptive body sensations or movements of the chest wall and abdominal wall while breathing.

Body inner voice sensation: Talking with our own body is different from talking to ourselves because talking to ourselves shows disorientation or inconsistency of time-place-person. Talking with our own body is very similar to body sensation practice is just the next process after sensing the parts of our body than softly talking about different parts of the body. In common practice, we should start with feeling appreciative and saying or softly talking about thanks to the body. This concept (Kabat-Zinn, 2013; Williams and Penman, 2011; Ng *et al.*, 2016) is based on the belief that the body cell is the smallest system of life. That means every cell in the body is an individual living being. If each cell communicates with one another in peace the body grows strong and it won't be sick. The patient should train to say thank you to the cells or ages in the body with feelings from the heart. For example, "thank the cells for their good works". It stimulates the cells to communicate again.

Table 1: Example for duration and frequency for mindfulness practice

Duration	Frequency	Overall time
5 min/time	1 Time a week	Every day
10 min/time	1 Time a week	6 sessions
30 min/time	1 Time a week	8 sessions
45 min/time	1 Time a week	6 sessions
60 min/time	1 Time a week	8 sessions
2 h/time	1 Time a week	8 sessions

Cancer cells characterize uncontrolled growth it attacks the autonomous system, threaten the surrounding cells and metastasize without control. It is an example of disconnection or non-communication between cells. Because cancer cells have animosity and behave like enemies with the surrounding cells they develop their own system to threaten the other normal systems. In the end, the overall system will fail and die.

All 6 techniques have the same goal which is to induce the patient to turn to mindfulness again. Even if returning to mindfulness cannot cure disease and eventually, the patients die at the same time as a patient who doesn't practice mindfulness, mindfulness leads the patients to use their own illnesses to learn and develop emotional and spiritual well-being for themselves, caregiver and family. However, there are also, variations (Beng *et al.*, 2016; Greeson *et al.*, 2017; Kabat-Zinn, 2013; Williams and Penman, 2011; Ng *et al.*, 2016; Pagnini *et al.*, 2014) in duration, frequency and long-term measurement in mindfulness practice. The summary is shown in Table 1.

CONCLUSION

Mindfulness intervention practice benefits patients, no matter what the form is. It is not only for patients in the final stage but also for the chronically-ill patients, especially those with the immune system disorder (Black and Slavich, 2016; Robinson *et al.*, 2003) such as systemic lupus erythematosus, HIV infection or patients with mood disorders (Fjorback *et al.*, 2011; Hofmann *et al.*, 2010) such as bipolar disorder, etc.

The combination of tangible mindfulness practice especially in patients who have been hospitalized for long periods and conventional treatment is not effective nor can it improve the well-being of patients. Mindfulness practice at the time of hospitalization is a golden time to care for the entire body, emotions, spirituality of patients and their relatives. It can thus be said to be a truly holistic care.

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