Chapter 4

Low Back Pain from the Perspective of Traditional Iranian Medicine (TIM)

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Additional information is available at the end of the chapter

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Abstract

In this chapter the attitudes and opinions of Traditional Iranian medicine (TIM) about "low back pain: (LBP)" are considered. According to TIM, several main mechanisms for this very common disorder are explained. The spine, being far from the body heat source (heart) that sets the spine in coldest position, is considered in terms of temperament. The most common type of low back pain is cold temperament, simple or material. However, movements in the joints would cause heating, but the range of motion of the spine is very limited, so that its temperament remains cold, and the most common type of low back pain is caused by a cold temperament. Pain is the most common symptom whichabates with walking, rubbing, and warming, and usually becomes worse with the cold.

There is some adaptation of risk factors and causes of low back pain in conventional medicine compared to TIM attitudes. Traditional Iranian medicine (TIM) represents very interesting fields for research and therapy which can be considered economically effective and lead to prevention and treatment for LBP. TIM's insight clarify that gastrointestinal disorders are one of the most important causes of low back pain, and dyspepsia is at the top of this context. In this chapter there is analysis of the results obtained during a post-after designed clinical trial on patients who have chronic low back pain. It was treated with *Mentha longifolia*, which is known as an effective herbal medicine for dyspepsia chosen as the medicinal plant used in TIM. The results of this trial indicate that intervention was quite effective on both dyspepsia and low back pain. Our results achieved that the reduction of gastrointestinal symptoms leads to decrease in disability and pain symptoms associated with low back pain.

Keywords: Low back pain, Dyspepsia, Traditional Iranian Medicine (TIM), *Mentha longifolia*

1. Introduction

In this chapter, the attitudes and opinions of traditional Iranian medicine regarding the very common disease of "low back pain" are examined and a clinical trial conducted based on a therapeutic theory in Iranian traditional medicine is discussed.

First, the definition of medicine, its division in Iranian traditional medicine, and a brief introduction of traditional Iranian medicine and its attitude toward humans and diseases is given. Then, with this view in mind, low back pain is discussed.

Medicine is a science that studies changes in the human body, which can lead to the preservation of health or to disease.

In his book" Al-Qanun-Fi-Teb", Abu Ali Sina states: "Medicine is a science by which the human body's conditions is known in terms of what causes health and disease in order to preserve health and, in case of loss of health, returns health to the body."

The important point in this definition is that the medical purpose and the physician's main task is to preserve human health. Treatment is second in priority, and still, it is much higher than what is proposed in conventional medicine today as "preventive medicine."

2. Division of the science of medicine

Medical knowledge is divided into two parts: theoretical medicine and practical medicine.

a. Theoretical medicine:

The knowledge that examines the normal human function of body changes and factors affecting this function which lead to health or disease and which finally helps doctors make a diagnosis is called theoretical medicine. It consists of three parts:

1. Natural matters: Matters that are the base of life, consistency and the preservation of physical perfection of the human body (physiology).

2. Factors and causes: The reasons for changes in the human body and their influencing factors and how to check disease incidence (etiology and pathogenesis).

3. Arguments and symptoms: Symptoms and signs which guide the doctor to diagnose health or disease, such as temperament symptoms and the dominance of humors, pulse, and urine (semiotics).

b. Practical medicine**:**

Practical medicine includes methods for preserving health (health preservation science) and restoring health (treatment science). It consists of three parts:

1. Measures: food measures (food or regime therapy) and other related directives of principle 6, which will be presented.

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2. Drug treatments with plant, animal, and mineral medicaments in oral and topical forms.
3. Manual application: Massage, acupressure, reflexology, etc., phlebotomy, and various surgeries.

Briefly, traditional Iranian medicine can be defined as a complete school and system, including diagnostic procedures, etiology, and treatment, based on intrapersonal differences (temperament) and on health preservation and the treatment of disease. Supported scientifically and empirically by several thousand years of Iranians and other nations, it regards the moral and cultural aspects and the Islamic doctrines that were reviewed and established through efforts by great scientists of the Islamic civilization, and the point of its perfection was reached. The characteristics of this school include holism, spiritual, physical, mental, and social trust for humans, a regard for active and passive qualities and the four humors, emphasis on disease prevention by lifestyle modification, strengthening spiritual views, and providing favorable conditions for internal system activity (called management power or nature). In this school, food and natural therapies take priority over drug treatments, single drug treatments take priority over compound drugs, and finally non-invasive treatments take priority over invasive treatments.[1]Temperament or individual differences, the infrastructure of the traditional Iranian medicine viewpoint:

What is considered the base of intrapersonal differences from the perspective of traditional Iranian medicine and upon which each treatment is based is called temperament. They can also be observed in combinations of hot and dry, hot and moist, cold and dry, or cold and moist. The human body is a composition of four elements: earth, water, air, and fire. It should be considered that they are different from earth, water, air, and fire that exist around us and each of these elements have their own especial properties:

- Earth: cold and dry
- Water: cold and moist
- Air: hot and moist
- Fire: hot and dry

A combination of different amounts of these elements creates numerous temperaments. No two people can have the same temperaments. Accordingly, healthy people in a simple classification temperament are divided into four main qualities: hot, cold, dry, and moist. They can also be observed in combinations of hot and dry, hot and moist, cold and dry, or cold and moist. These qualities can be created with or without material if material existed. Temperament is divided as follows: sanguineous (hot and moist), choleric (hot and dry), phlegmatic (cold and moist), melancholic (cold and dry).

Everything around us has a special temperament because each is a composition of the four elements[1].

Every person is born with a temperament. If one remains in compliance with the instructions necessary to preserve health and prevent disease, one's temperament throughout life will have no adverse changes, except those expected in every season, location, and different age periods.

If one does not comply with the given rules and measures for his temperament, however, one's temperament will be changed and will lean toward an adverse health condition, and those changes cause all or part of the function disorder.

The principles of health preservation and disease prevention that can be defined in terms of lifestyle is placed in the framework of six essential principles in Iranian traditional medicine: air, food, and drink; movement and rest; sleep and wakefulness; emotional states; cleansing the body; and keeping the essential material.

The most important part of the treatment program is also set by considering these six principles. These six principles and how they are applied in preventing and treating low back pain will be explained in the following section[1-2].

Given the different perspective of traditional Iranian medicine on categories of health and disease, searching through traditional Iranian medicine resources can be useful for finding different solutions and alternatives to conventional medicine for the prevention and treatment of diseases and for opening a new window to ways of dealing with these problems. Today, an important issue in society health is chronic diseases[3]. Currently, the prevention and control of chronic diseases is a major health concern [4]. Despite surprising advances in medical knowledge, many diseases, including low back pain, remain a mystery [5]. Low back pain, despite having an ancient history, is still epidemic in modern society [6]. This disease is one of the most common health problems in different world societies, especially in industrialized countries [7].

Low back pain is one of the most common causes of low patient referral to health and treatment professionals. It has been declared the fifth leading cause of reference to a doctor in America [8-9]. Between 1/2 and 3/4 of all adults will experience low back pain. About 40% of adults had a low back pain attack in one year, and at any given moment, 15–20% of the adult population suffers from low back pain [10]. Since all individuals with low back pain will not necessarily go to a health center, exact statistics on the prevalence of this disease are not known. In fact, only about 40% of patients with low back pain refer to health professionals for this problem. Previously the prevalence of this disease was considered 7–8%; it has now been declared as 40–50% [11]. In America, 176 million hours of useful work are lost annually due to this disease, and low back pain in the United Kingdom imposes annually £480 million of direct loss and £5 billion of indirect loss on the country's economy [12]. In recent years, $5–10 billion of rising costs in the United States are related to advanced imaging technologies. Low back pain is much more costly than other diseases such as rheumatoid arthritis, respiratory infectious diseases, Alzheimer's, diabetes, depression, multiple bridge sclerosis, embolism, and stroke [13-14]. These costs are direct costs of the disease; its social and indirect costs such as non-routine treatments and sick leave from work in the United States are estimated to be about $75–100 billion. With the variety of available treatments and advances in imaging techniques, it is expected that better treatment results would be seen compared to the past, but the results of these investigations do not indicate improvement [15].

Treatments include conservative measures and prescriptions for topical and systemic analgesic and anti-inflammatory medications or inhibitor drugs, modulators of the immune system, and

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surgery [9], each of which has its own side effects. A 2001 study in Sweden showed that 53.1% of men and 57.4% of women have cervical disc hernia disease and are treated with non-steroidal anti-inflammatory drugs [16]. Studies show that 15–20% of patients who chronically use non-steroidal anti-inflammatory drugs have ulcers of the stomach or duodenum [17]. Long-term use of these drugs has many complications for the patient, including physical dependence upon the drug, gastrointestinal disorders such as gastritis, nausea and vomiting, respiratory complications, myocardial infarction, and renal failure. Corticosteroid medications are not recommended for long-term use because of their immunosuppressive effects [18].

The efficacy of intrathecal injection is limited, and using an opioid may conversely cause increased sensitivity to pain. Moreover, surgery is sometimes associated with worse complications [15]. It is now suggested that bed rest, long considered a key part of treatment, be limited and only short term, because its effectiveness has not been proven [19]. The proper treatment of this disease is still unknown [20].

Low back pain is usually seen in the working age population, and therefore it imposes high economic costs on society [21]. Pain affects health, functionality, and the quality of life of patients; chronic pain causes physical and mental health involvement in adults and children [22].

Results of this investigation show that low back pain is a costly problem for present-day societies, and in many cases, classic medicine is an ineffective treatment. Given the global approach to supplemental medicine, searching for treatment strategies in schools of thought of supplementation, including that of Iranian traditional medicine, seems imperative.

This chapter has two parts:

1. The attitudes and opinions of traditional Iranian medicine regarding the very common disease of low back pain are examined.
2. Clinical trial conducted based on a therapeutic theory in traditional Iranian medicine is discussed.

3. Low back pain causes in Iranian traditional medicine

Ibn Sina considered low back pain a muscle and tendon disease (what comes from the muscles to the bones). Basically, what will come in the future from causes mainly affects the members, and what causes the members' disorder will have a serious effect on the performance of the spine. These causes are also expressed in conventional medicine for low back pain. Bone disorders are less considered for low back pain, and low back pain is mostly associated with muscle problems. Pain due to muscle spasm has been mentioned as a mechanism for low back pain, and the major role played by muscles in preserving back health has been emphasized.

Since nervous diseases are discussed, muscular disorders are presented, because, by definition in the rule book, the muscle is a part composed of nerves, and because the nerve does not have the capability of binding to the bone, a rougher part, that is the tendon, connects to it that transfers motion commands to the bone. The existing space between the nerves is filled with

flesh and a membrane covers it; that, in fact, is a nerve muscle. Muscle relaxation is caused by diluted moisture that muscle strength is lower than normal and seizure in muscle where muscle length is low and its width is high includes a variety of dry and moist adverse health that moist type is condensed due to moisture and frequent and shows symptoms suddenly. Sometimes seizure is bilateral, where the length is high and width is low and is called "TAM-ADOD" [23]. Each of these disorders can also occur in lumbar muscles and cause pain. In other words, the causes given in the following text in most cases affect muscular structure.

1. **Simple hot temperament**: This type of low back pain is related to body heating causes. If any of the causes of heating becomes imbalanced, it can cause hot temperament. This could be in general or due in part to the effect of the cause.

2. **Simple cold temperament or phlegmatic temperament in the back**: The most common types of low back pain are cold temperament, simple or material. The spine, being far from the body heat source (heart) and lacking a range of movement in the coldest position, is considered in terms of temperament. One may propose that the joints are farther to the back. In response, it should be said that a lot of movements in the joints would cause its heating; however, the range of motion of the spine is very limited. Because of this, its temperament is cold, and the most common type of low back pain is caused by a cold temperament.

3. **Excessive sex and fatigue:** This can cause dryness due to the effect of decreased body moisture, and muscle disorder occurs due to dryness. It can stimulate the loss of raw material and condense moisture or phlegm to the area, in which case symptoms would be different.

4. **Anger**: As previously stated, anger can stimulate material and cause phlegm to reach the back. In fact, some factors such as anger, sex, and excessive fatigue can cause low back pain due to the flux of material to the position. If pain on the back or joints occurs due to flux of material, depending on the material dilution or concentration, symptoms such as inguinal hernia and upper or lower limb swelling, enlarged lymph nodes in the inguinal, axillary, and gluteus can be experienced.

5. **Shape change and curvature of the spine**: Anatomical changes can be caused by a hit or, without it, the direction change can be side or front and rear protrusions. From the perspective of Iranian traditional medicine, each factor consists of swelling in one direction, the presence of diluted moisture that causes loss of muscle strength, and/or condensed moisture that increases muscle strength, and shortening its length can change the direction of vertebra and their protrusion and cause low back pain. The risk of curvature of the spine structural disorder in children whose feeding is begun early is high because of the production of condensed moisture.

6. **With the participation of some viscera**:

    a. GI: The four stages in traditional Iranian medicine are expressed for material entering the body to be digested as a part of the organ. First digestion occurs in the stomach, and its disorder can be directly associated with organ dysfunction, because the

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material's conversion process will be disrupted by the non-production of adequate mucus. Disruption in weaker organs is expressed more, and organ weakness occurs more in less heated organs. As the back is one of the coldest organs, it will suffer from dyspepsia. When digestion is impaired, more gas is produced in the GI; the existence of these gases can pass through the membranes of the gastrointestinal tract and reach the back area, thus causing low back pain. In traditional Iranian medicine resources, the stomach temperament in most patients with dyspepsia is cold. Clinical trials mentioned in this section also confirmed the result that patients with dyspepsia suffering low back pain are in fact patients who, in most cases, have cold and moist dyspepsia simultaneously in the back and stomach.

b. Kidney: Stones in the urinary tract and kidney failure may be associated with low back pain.

c. Uterine problems**:** Closer to menstruation, delayed menstruation, lack of proximity, delivery pain.

4. **At the critical stage of the disease**: In Iranian traditional medicine, it is believed that some diseases reach a stage in which one symptom is material excretion in urine or stools; in other words, low back pain, urination, or diarrhea are observed [23-24-25].

4. Low back pain Signs and symptoms in Iranian traditional medicine

The signs and symptoms of each type of low back pain and methods of diagnosis will be discussed separately.

1. Low back pain due to simple hot temperament:

This type of low back pain has inflammation in the area and its pain is not with weight. There is no beat. Common symptoms of hot temperament may be chromatic urine and thirst, which abate with the ingestion of cold temperament foods.

2. Low back pain due to simple cold temperament:

Gradual pain without weight that abates with walking, rubbing, and warming and sometimes becomes worse with the cold. Often, the back is cold to the touch.

3. There is raw moisture and phlegm in the back muscles and spine that are produced in the back area:

Gradual pain with weight abates with warming, walking, and rubbing and sometimes becomes worse with the cold and at night. Sometimes the back is cold to the touch.

4. Extreme sex, fatigue, anger, or whatever causes flux phlegm, moisture, and/or gas in the back:

In patients who have mucus loss in the back, sudden severe with weight in the back and constant intensity. If the pain reaches the position by the preceding factors, the pain is like tension and transmitted with less weight.

Sometimes fatigue, heavy loads, bending, and excess sex without loss of materials cause pain which is felt as soreness in the muscles.

5. Due to deviation of the spine and herniated vertebral:

If this condition is caused by an injury, the individual's history indicates it. If it is due to the presence of moisture in the place, the oil when massaged into the skin will not be absorbed. If the low back pain occurs due to dryness of spine deviation, oil absorption will be observed when the back is massaged with oil. Sometimes gas in the spine will cause this, but in this case the pain will be different and spine protrusions will occur after low back pain.

6. In participation with other organs:

If it is partnered with the **digestive system** by dyspepsia, symptoms such as bloating, dyspepsia, and heaviness after a meal will occur. Sometimes there may be nausea and vomiting, and low back pain or constipation may be observed. If it is partnered with the **urinary system:** the symptoms due to stones in the urinary tract and kidney failure may be exist with low back pain.In partnership with **uterus**: Low back pain is also seen at times of childbirth or menstruation and in individuals with irregular menstrual periods, low bleeding, or undesired sexual relations. Low back pain due to crisis: If fullness is in the intestines, diarrhea occurs, and if it is in the kidneys, it takes the form of increased urine volume and changes in urine color and density [23-24-25].

- As noted, the main cause of low back pain in most cases can be traced to muscular disease which, in most cases, includes structural abnormalities including muscle shortening and thickening, becoming long and thin or loss of muscle strength.

Among causes also expressed in modern medicine for low back pain, bone disorders are less considered. Low back pain is mostly associated with muscular problems. The mentioned mechanisms for pain in the back area and pain due to muscle spasm are accepted, and the important role of muscles in the preservation of back health is emphasized. Given the multifactorial nature of low back pain and the controversy in determining its most common cause, specific views exist regarding its natural treatment, some of which have serious opposition; however, the use of active participation methods is confirmed by all [26]. Various exercises influencing different muscles can improve low back pain [27-28-29]. Interestingly, clinical trials have shown that the only therapeutic method proven to be effective in all trials is sports and physical activities. Each of them reinforces one set of muscles of the abdomen and back, including the paravertebrals [30]. In some studies, the relationship between muscle weakness and pain intensity and also that between the muscle cross-sectional area and inability resulting from low back pain has been proven [27], and body muscle dysfunction is acceptable as a cause of low back pain continuity. Even low back pain resulting from psychological states, such as anxiety or anger, has muscle tension and stress, and by decreasing the psychological pressure, the tension and stress will be reduced [28]. traditional Iranian medicine explains this issue as a sudden loss of material in muscles. It has been seen several times at the bedside of a person with severe anger that this person's low back pain is due to a loss of material in the back muscles and tendons. Even in psychological pressure and sensual complication, the role of muscles

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and their involvement are emphasized and confirmed, and psychotherapy procedures for low back pain also control the removal of muscle spasms [31]. Therapeutic techniques such as water therapy can reduce pain in such patients by increasing the flexibility of muscles, which subsequently reduces muscle spasms [29].

5. Relationship between low back pain risk factors in conventional medicine and from the traditional medicine perspective

In terms of temperament in Iranian traditional medicine, the back is far from the body's heat source (heart) and, being the body's coldest region, has a limited range of motion. The most common type of low back pain is cold type either with or without a medium of material. The low back pain risk factors in modern medicine confirm the traditional medicine viewpoint in this regard; therefore, low back pain risk factors in modern medicine are the factors that, in traditional medicine, cool the temperament [32-1]. They are given in Table 1.

Risk factor of low back pain in modern medicine	Conformity to traditional medicine view about the prevalence of low back pain with cold temperament
Obesity	Obesity is often caused by a cooling body temperament and waste and moisture accumulation.
Age over 50 years	This age in traditional medicine is the period that the body has a cold temperament.
Female	In comparing the two genders, the female is cooler.
Psychological stress and disorders	Major categories of stress cause an inherent heat decrease and a generally cold temperament, and consequently organ temperament.
Body heavy works	Inherent heat decrease causes cooling of the body.
Sitting works	Accumulation of moisture and moderate heat cause heat decrease and cold temperament.

Table 1. Adaptation of risk factors of low back pain in conventional medicine to traditional medicine view

6. Recommendations in traditional Iranian medicine for preventing low back pain

Recommendations for preventing low back pain with respect to the six principles of traditional Iranian medicine are listed in the following text.

Note: Since the most common type of low back pain is the cold type (simple or material), recommendations are provided based on that type.

6.1. Air

Air is the most important of the six causes, and since each person is permanently associated with it, it has a particular effect on health. In order to prevent a recurrence of low back pain, the following are recommended for everyone.

1. Avoid exposure to cold weather for long periods, such as normal weather turning in winter or synthetic cold from air conditioners.
2. Avoid exposure to hot weather for long periods, such as exposure to extreme hot weather in outdoor jobs, like farming.
3. Avoid contact with surfaces that have low temperatures, such as tile, ceramic, and plaster that transfer cold to the organ.
4. Cover the back with a suitable cover at all times.
5. If attempting to carry out business or exercise activities in a cold environment, using a heated cover in the back area is strongly recommended.
6. Avoid living in moist and humid environments.

6.2. Food and drink

Nutrition is another essential cause that has direct relationship with the back, and the relationship between low back pain and dyspepsia are clear. Three major matters 1) how much to eat; 2) what to eat; and 3) how to eat are discussed as they pertain to the prevention and treatment of low back pain.

6.2.1. How much to eat?

Traditional medicine resources and modern medicine emphasize reducing food consumption for the prevention and treatment of low back pain. In terms of the amount and number of calories, this is applicable in three forms.

1. Consume less food in a diet that consists of low-calorie foods; at the same time the quality of food should cause a positive effect on the quality of the disease (eating cold **temperament** foods is less recommended).
2. Maintain consistency in the amount of food consumed, and the diet should consist of low-calorie foods.
3. Reduce the amount of foods, but the diet should not be low-calorie in terms of energy.

Any one of the three diets is selected based on a patient's strengths and weaknesses.

It is important to note that an extreme reduction in food intake can cause a cold temperament and, consequently, low back pain.

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6.2.2. What to eat?

From research in modern medicine and traditional medicine resources, the following recommendations are summarized:

1. Avoid eating foods that are hard to digest and are more likely to make mucus. Processed foods and fast food fall into this category.
2. Eat foods that are more quickly digested, that cause a lightheadedness after eating them, and that do not put an additional burden on the digestive system.
3. Eating hot **temperament** foods is recommended for these individuals.
4. Avoid eating fruit, especially peaches and plums. Low back pain patients should not eat dried figs.
5. Avoid beets, carrots, and cucumbers.
6. Avoid alcoholic drinks.
7. Avoid meat, particularly beef and pork.
8. Avoid pickles.

6.2.3. How to eat?

The importance of the time of eating and drinking is noted in resources of traditional medicine and is summarized in the following:

1. Consider the principles of drinking water and other liquids, including not drinking water with meals, fasting at midnight, or when the body is warm, like after exercise, intercourse, or in the bathroom.
2. Avoid eating at the same time and eating together in the sense that one type of food is eaten at each meal and food intake is done after gastric emptying the previous meal.

6.3. Sleep and wakefulness

traditional Iranian medicine considers the amount and location of sleeping.

6.3.1. How much sleep?

1. Avoid sleeping too much, which causes the accumulation of moisture in the body.
2. Avoid too much wakefulness that prevents a person from revitalizing.
3. Avoid long naps during the day.
4. In the treatment of patients with acute low back pain, modern medicine recommends against bed rest for more than 2–3 days; traditional medicine also recommends against excessive bed rest, because it causes a long break moisture decrease.

6.3.2. Where to sleep?

1. Considering the cold quality of the disease, the temperature and location of sleep is important; it is recommended that sleeping in cold and damp locations be avoided.

- **Movement and rest:**

One of the most important causes associated with low back pain is sports. The only method of prevention and treatment confirmed as effective in numerous articles is physical movement. Although the reviewed articles suggested that there is a need for comprehensive research to compare different sport systems, it is clear that exercise is effective in prevention of first, second, and third levels.

Exercising in moderation strengthens, and it is recommended for all. It is not recommended by the experts but after passing acute phase, exercise is recommended at all times. Because of its beneficial and positive role, balanced exercise is approved. Doing extreme movements in terms of quality or quantity can be harmful. In summary, the following recommendations are given regarding physical movement:

1. Do moderate exercise and physical movements to prevent and treat low back pain.
2. Avoid extreme immobilization and high inertia.
3. Avoid heavy work and excessive fatigue. It is recommended that heavy loads be carried in the correct manner. The prevalence of low back pain in people who have heavy work is equal to people who work in an office, but radiological changes are more in people who do heavy work.
4. According to the traditional medicine view on the common temperament of the disease, it seems that using chairs made of metal that transmit cooling could have a negative effect on prevention or treatment of the disease. There is, however, a need for further research.
5. Traditional medicine also recommends that one wear shoes of a natural type that can be helpful in transmitting heat and protecting feet from cold.
6. Avoid sitting in awkward and fixed positions. This is especially recommended for people who work in an office.

- **Emotional states:**

As in all research, the relationship between low back pain and psychological issues has been proven. In traditional medicine, this issue is also important, and one of the causes of low back pain is anger. The following recommendations are provided in this regard:

1. Avoid continuous stress and anxiety-causing situations that can cause muscle spasms.
2. Avoid computer games that cause stress in children and adolescents.

6.4. Cleansing the body and keeping the essential material

If the means of waste disposal in the body are disrupted, the body's moisture retention capacity causes low back pain, such as in menstrual disorders, being deprived of intercourse in the

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person who is used to having it, menopause, stopping bleeding from hemorrhoids that for some people is a way of disposal, constipation, urinary retention, impaired perspiration, or perspiration breaker treatments, delayed bathing, and similar cases which all can be effective in the development or recurrence of low back pain.

On the other hand, the loss of many materials needed by the body can make the body more prone to this disease, such as too much intercourse, excessive fatigue, prolonged disease, and prolonged and frequent bathing that removes moisture from the body (one sign of this is shriveling finger skin) [1-23-24-25].

7. Conclusion

In most cases, low back pain is a muscular disease that causes pain, and most of its causes and reasons explained in both traditional and modern medicine confirm the important role of muscles. This very common disease is in most cases of the cold temperament type that can be prevented by complying with simple recommendations of health preservation and life style, many of which are approved by both medical points of view. In Iranian medicine, preventive recommendations are in six categories: air, foods, and drinks; movement and rest; sleep and wakefulness; emotional states; cleansing the body; and keeping the essential material, which are known health as principles. Moreover, many of these recommendations are useful in treatment or in preventing a recurrence of the disease.

8. Analysis on a Clinical trial on patients with chronic low back pain based on traditional Iranian medicine issue about participation back and gastrointestinal system

As was discussed in the section on the causes of low back pain, traditional Iranian medicine views gastrointestinal disorders as causes of low back pain, and at the top of this list is dyspepsia. The elders of traditional Iranian medicine initially advised patients with low back pain to treat their disorders of digestion [23]. In order to examine this idea, a clinical trial was performed in which patients with chronic low back pain who were also diagnosed with functional dyspepsia were treated with an effective drug for dyspepsia from the perspective of traditional Iranian medicine as described in the following text.

8.1. Study sample size

Since there was no similar study, in the first stage, a sample size of 30 people for each group was considered with the provision that this number would be increased if necessary. Since the results of data analyses indicate the achievement of the study objectives, the study was completed with 60 people.

8.2. Sampling method

Sampling was done by available samples to achieve desired sample size.

Target population: All patients 20–55 years old having the study inclusion criteria.

Study population: Patients 20–55 years old admitted to neurosurgery clinic.

8.2.1. Inclusion criteria for the study

Men and women 20–55 years old having had symptoms of low back pain for more than 3 months and having pain at the time of inclusion, dyspepsia symptoms according to the signs of ROME III (valid questionnaires to diagnose dyspepsia) [33], consistent symptoms from 3 months prior to inclusion in the study, and onset of low back pain at least 6 months prior to inclusion in the study.

Symptoms of patients who were diagnosed comprised

1. One or more of the following:
    a. Bothersome postprandial fullness after a normal-sized meal occurred at least several times a week.
    b. Early satiation that prevented ending a regular feeding and occurred at least several times a week.
2. No evidence of structural disease (including at upper endoscopy) that is likely to explain the symptoms.

8.2.2. Exclusion criteria

Patients who reported the following symptoms were excluded from the study:

- Intensified pain at night or at rest, previous history of cancer, history of chronic infection, history of stroke, urinary incontinence, age over 50 years, age below 20 years, intravenous drug abuse, history of corticosteroid use, history of progressive neurological deficit, unexplained fever, unexplained weight loss, percussion pain in the spine, abdominal, rectal, and pelvic mass, percussion or Patrick heel mark, straight leg raising(SLR), and progressive focal neurological symptoms.
- Symptoms of gastro esophageal reflux disease (GERD) as burning, painful swallowing, history of gastrointestinal surgery, specific symptoms of irritable bowel syndrome (IBS), any abdominal pain, overnight diarrhea and fatty feces, immune system disease, mental abnormality, presence of risk for symptoms such as excessive weight loss, black, tarry, or bloody stools, the presence of uncontrolled severe organ diseases such as cancer or kidney disease, progressive symptoms, use of aspirin or non-steroidal anti-inflammatory drugs (NSAIDs), use of steroids or narcotics, and women who were pregnant or breastfeeding.

In the selection stage, patients who were taking any antibiotics or a proton pump inhibitor (PPI), H2 blockers such as ranitidine, cimetidine, or famotidine, Prokinetic drugs like Dom-

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peridone and metoclopramide, consuming lactulose or similar compositions, consuming other herbal drugs, or involved in other research projects were excluded from the study.

Duration of study: Intervention duration and the follow-up period were each 4 weeks, making a total of 8 weeks.

8.3. Study variables and measurement tools

a. Pain intensity due to low back pain was measured by an NRS system that divided the patients into four groups: no pain (0), mild (1), moderate (4-6), and severe (10).

b. Functional disability was measured using the Oswestry questionnaire.

Total score is a fraction of the 50 scores (maximum possible score) multiplied by 100 to get an overall percentage. Patients were divided into the five classes including mild (0–20%), moderate (21–40%), severe (41–60%), crippled (61–80%), and bed bound (81–100%) [34].

c. Severity of dyspepsia was measured by LEEDS questionnaire, and its total score was considered. The results were divided to 4 groups: mild [1-12], moderate [13-24], severe [25-36], very severe [37-4] [35].

Overall body temperament and stomach and back temperaments were examined separately by questionnaire upon arrival.

In this study, pain intensity and functional disability due to low back pain and dyspepsia intensity were measured before intervention, at the end of the second and fourth weeks, and eight weeks after intervention.

9. Intervention

According to the authoritative texts of Iranian traditional medicine, *Mentha longifolia* which is known as an effective herbal medicine for dyspepsia was chosen as the medicinal plant used in this study [23-24]. Aqueous extract of *M. longifolia* was prepared. The medicine was prepared in 500 mg capsules containing 250 mg concentrated *M. longifolia* extract and 250 mg starch as filler.

Medicine standardization

Total phenolic compounds of this extract were determined with Folin–Ciocalteu's reagent [36] that used gallic acid as a standard phenolic compound. The total phenolic contents in the extract was 39.1±1.6 mg GA/g. The contents of flavonoids in the extract was determined with spectrophotometric method [37] using rutin as a standard. The total flavonoids contents in the examined extract was 7.58±1.47mg RU/g.

9.1. Analysis the results

In order to analyze the results in four periods of the variables studied, the Friedman test was used.

9.2. Results

In this study, the mean age of the patients was 41.3±9.6 years. Fourteen patients were male (46.7%) and the rest were female. The mean body mass index (BMI) was 26.3 ± 3.4.

The maximum frequency of general temperament with a frequency of 16 was related to moist and cold temperament; the maximum frequency of the stomach (a frequency of 25) was also consistent with general temperament and was moist and cold. Furthermore, 83.3% of patients had the cold and moist temperament in their back, which is still in line with the general and stomach temperaments indicating a cold and moist temperament.

Table 2 shows the results of functional disability. Results indicate that in the beginning of the study, 14 patients had moderate functional disability resulting from low back pain, 14 patients had severe functional disability due to low back pain, and 2 patients had crippled low back pain. At the end of the eighth week, all patients were placed into the group of minimal disability. Friedman's nonparametric test was used, and the results indicated that the scale had a statistically significant difference (P = 0.001).

Time		**Pre**	**2 weeks**	**4 weeks**	**8 weeks**
The number of patient		30	30	30	30
Relative frequency percentage of functional disability	MINIMIZE	0	50	100	100
	MODERATE	46.7	50	0	0
	SEVERE	46.7	0	0	0
	CRIPPLED	6.7	0	0	0
	BED-BOUND	0	0	0	0
mean±SD		43.2±8.4	21.3±4.3	6.9±1.4	4.9±1.6
Friedman's nonparametric test			0.001		

SD: Standard deviation

Table 2. Functional disability (Oswestry disability index) due to chronic low back pain

30 patients in clinical trial with chronic low back pain with functional dyspepsia who used *Mentha longifolia for 4 weeks* Values are expressed as mean (95% confidence interval). Friedman's nonparametric test was used, and the results indicated that the scale had a statistically significant difference (P = 0.001).

Table 3 shows information about severity of pain. At the beginning of the study, 22 patients had moderate low back pain, and 8 of them had severe low back pain. At the end of the eighth week, all patients were placed in the group of minimal low back pain. The Friedman nonparametric test was used, and results indicated that the scale of this group had a statistically significant difference (P = 0.001).

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Time		Pre	2 weeks	4 weeks	8 weeks
The number of patient		30	30	30	30
Relative frequency percentage of severity of pain	NO PAIN	0	0	0	0
	MILD	0	33.3	80.0	100
	MODERATE	73.3	66.7	20.0	0
	SEVERE	26.7	0		0
Mean± SD		5.8±0.9	3.9±1.01	2.6±0.9	2.07±0.6
Friedman's nonparametric test			0.001		

SD: Standard deviation

Table 3. Severity of pain (NRS) due to chronic low back pain

30 patients in clinical trial with **chronic low back pain with functional dyspepsia** who used *Mentha longifolia for 4 weeks.* Values are expressed as mean (95% confidence interval). Friedman's nonparametric test was used, and the results indicated that the scale had a statistically significant difference (P = 0.001).

Table 4 and Diagram 1 show that all patients at the beginning of the study had dyspepsia with different intensity levels, including moderate, severe, and very severe. At the end of the study, all participants had only mild dyspepsia.

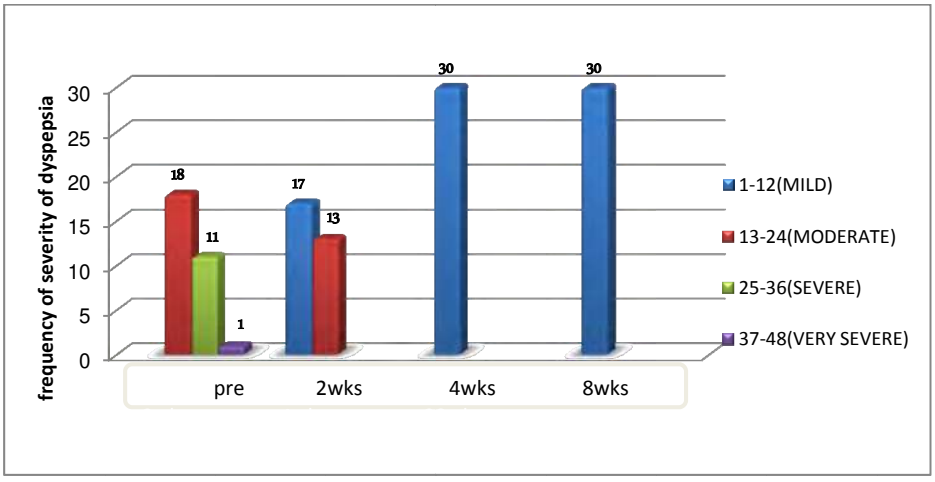

Diagram 1. Severity of dyspepsia at four different times.

30 patients in clinical trial with **chronic low back pain with functional dyspepsia** who used *Mentha longifolia for 4 weeks.* Values are expressed as frequency

Time		Pre	2 weeks	4 weeks	8 weeks
The number of patient		30	30	30	30
Relative frequency percentage of severity of dyspepsia	MILD	0	6.4	100	100
	MODERATE	6.8	4.9	0	0
	SEVERE	4.2	0	0	0
	VERY SEVERE	.4	0	0	0
Mean± SD		22.6±6.45	12±3.6	5.3±2.6	2.7±1.02
Friedman's nonparametric test			0.001		

SD: Standard deviation

Table 4. Severity of dyspepsia due to functional dyspepsia

30 patients in clinical trial with **chronic low back pain with functional dyspepsia** who used *Mentha longifolia for 4 weeks.* Values are expressed as mean (95% confidence interval). Friedman's nonparametric test was used, and the results for severity of **functional dyspepsia** indicated that the scale had a statistically significant difference (P = 0.001).

In Diagram 2, the results of severity of pain and dyspepsia are shown together. The results of severity of disability and dyspepsia are shown together in Diagram 3.

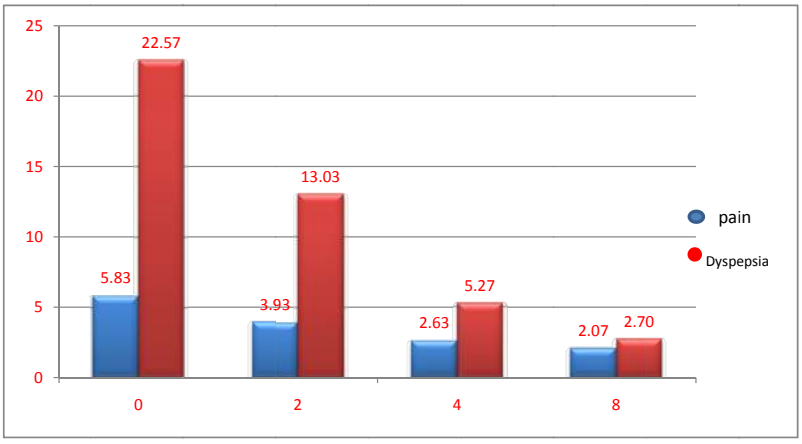

Diagram 2. Severity of pain and dyspepsia at four different times.

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Patients in clinical trial with **chronic low back pain with functional dyspepsia** who used *Mentha longifolia for 4 weeks.* Values are expressed as frequency.

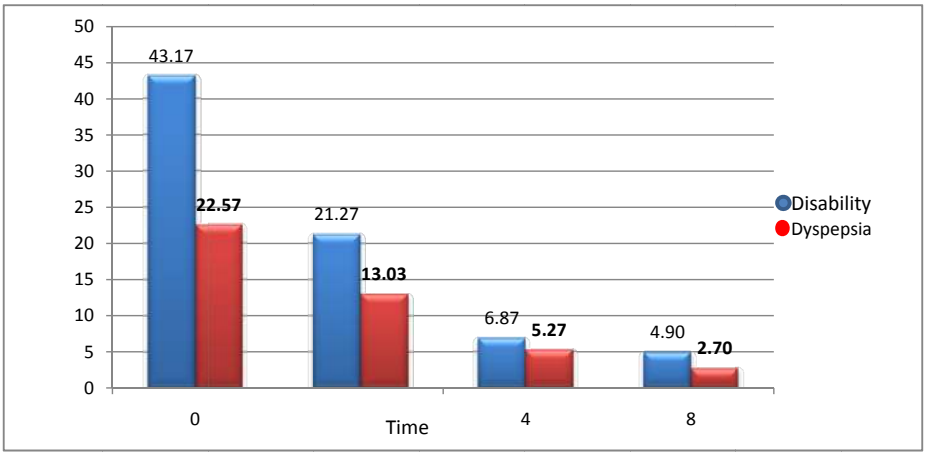

Diagram 3. Severity of disability and dyspepsia at four different times

Patients in clinical trial with **chronic low back pain with functional dyspepsia** who used *Mentha longifolia for 4 weeks.* Values are expressed as frequency.

In order to investigate the correlation severity of pain and dyspepsia, Pearson's correlation coefficient was used. This analysis indicated that in 4 periods there is a direct linear relationship between severity of dyspepsia and pain severity. This result repeated about correlation between severity of dyspepsia and disability due to low back pain. There is a direct linear relationship between them in 4 periods.

10. Discussion and conclusion

The purpose of this trial was to investigate the relationship between dyspepsia and low back pain according to traditional Iranian medicine issue. Although research indicates that dyspepsia and low back pain are synchronized [38-39], so far no trial has been conducted to examine the relationship between them. The results of this trial indicate that intervention was effective on dyspepsia and low back pain simultaneously. Reduction in symptoms of gastrointestinal problems leads to decrease in symptoms associated with low back pain (pain and disability). Although a positive Pearson coefficient did not show a causal relationship between them, it did indicate a direct relationship between dyspepsia and back pain. Of course, more extensive research with a larger number of participants would achieve more accurate results.

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