



A REVIEW ON NEUROTICISM AND BACK PAIN

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ABSTRACT

In the Present Study we aim to review different Neurotic Disorders and Back Pain.

METHOD USED

This was a review on Medical, Psychological Literature and Studies.

KEYWORDS : Neuroticism, Back Pain.

INTRODUCTION

The back covers large area in human body from top to buttocks in posterior area.^{22,12} It lies opposite to the chest defined by vertebral column the height and breadth supported by rib cage.²² The spinal cord runs through the spinal canal which has some curvature and it gives shapes to the back.^{22,12} The ribcage extends from the spine at the top of back, the width of the back at the top is defined by scapula.^{22,12} The spine is bordered by several groups of muscles which aids in movement between the individual vertebrae and also facilitates complete movement of spine as a whole.^{22,12} Other movements of back muscles are associated with movements of neck and shoulders.^{22,12,20} Trapezius runs between neck, the two shoulders, thoracic vertebrae, T12. triangle is made from shoulder to hip with latissimusdorsi.^{22,12,20}

HUMAN BACK

The back gives complete support for the head and trunk of the body, strength in the trunk, flexibility and movement to body.^{22,12} Lumbar vertebrae only allow extension and flexion whereas it does not provide twisting.^{22,12,20} Vertebral column consists of 32 bones which are divided into 5 sections:

Cervical: These are the smallest vertebrae forming neck and consist of 7 vertebrae. Axis and Atlas are the top two vertebrae allowing rotation of head on neck.^{22,12} Flexion, extension, rotation and lateral flexion are allowed by these vertebrae.^{22,12,20} Atlas does not have a body here in this case there is arcing of bone which attaches to the Axis by Odontoid process on which atlas rotates.^{22,12,20}

Thoracic: Thoracic spine consists of 12 vertebrae and runs down from shoulder level to lowest edge of ribs.^{22,12} Each vertebra forms costovertebral joint with the adjacent rib.^{22,12,20} It does not provide free movement as its main purpose is to provide stability to the rib cage. The bones are named with T (T1-T12).^{22,12,20}

Lumber: It consists of largest 5 vertebrae and form lower back.^{22,12} This region allows flexion, extension, rotation and lateral flexion.^{22,12} This region carries all the additional weight.^{22,12} The bones are named with the letter L (L1-L5).^{22,12,20}

Sacral: This region is made of 4 vertebrae fused together which cannot be moved independently.^{22,12} Sacral spine forms link between spine and lower body.^{22,12} Gap between two sides of the pelvis are bridged by sacrum.^{22,12,20}

Coccyx: Tail bone is also referred to as coccyx.^{22,12,20} It consists of 4 small fused bones and is the lower most part of the vertebral column.^{22,12,20}

Shape of vertebra: Shape includes a large flat circular section called "body". It carries the weight of the vertebra above it.^{22,12,20} Cartilaginous disc present in between two vertebrae provides cushioning and shock absorption. Three bony processes protrude from the back of the body.^{22,12,20} Central structure is called the spinous process whereas the other two on either side is called transverse process.^{22,12,20} Muscles attach to the vertebra at the site of these processes and Foramen is the hole present at the middle of these three processes.^{22,12,20} Spinal cord extends from brain into foramen of each vertebra from this spinal cord nerves arise sideways and travel around the body to supply all muscles and organs.^{22,12,20}

Facet joints and Sacroiliac joints are both associated with lower back. Facet joint connect adjacent vertebrae and allow their movement.^{22,12,20} These occur in pair at the back of each vertebra. Movement of facet joints is dependent on their angle and orientation. Pain in its joint may arise directly due to inflammation or nerve irritation in that area. Sacroiliac joint is formed by the sacrum and each side of pelvis.^{22,12,20} When legs are moved this joint only allows very small gliding movement. Sometimes only one side of pelvis can glide whereas the other one gets struck this situation is referred to as twisted pelvis.^{22,12,20}

Intersegment ligaments are known to provide support to the entire vertebral column. They connect one vertebra to another.^{22,12} They include: Ligament flavatum: strongest ligament supporting posterior surface of spine.^{22,12} Interspinous: it is present in between each spinous processes.^{22,12} Intertransversarii: it connects transverse processes to the one above and below on the same side.^{22,12} Intrasegmental ligaments are long ligaments providing support to the entire spine.^{22,12} Anterior and Posterior longitudinal ligaments run down from front and back of vertebral bodies.^{22,12,20}

Facet joints are on the posterior side of vertebra and provide movement thereby giving flexibility.^{22,12} Pedicle is the wall of spinal canal and is present on either side of the vertebra.^{22,12,20} Intervertebral discs act as shock absorbers and are present in between the spine.^{22,12,20} Disc consists of outer tyre like structure called annulus fibrosus and nucleus pulposus is gel like inner substance.^{22,12,20} Spinal canal: It is the tunnel like structure running through the spine and is guarded by vertebrae and discs.^{22,12,20} Spinal cord and nerves run through this.^{22,12,20} Besides nerves back also has muscles, ligaments, tendons, blood vessels.^{22,12,20} Muscles provide power for movement & Ligaments connect bones together.^{22,12,20} Blood vessels provide nourishment.^{22,12,20} Back pain can be associated to injury to any part of the spine, Injury to muscles, ligaments, tendons cause sprain. Intervertebral discs can crack exposing nucleus pulposus, annulus fibrosus.^{22,12,20} These all conditions cause pain and inflammation.^{22,12,20} The anatomy of spinal

column is designed to protect spinal cord. Also, the back is most important body part providing support to trunk, and making movements of head, arms and legs possible.^{22,12,20}

LOW BACK PAIN / LUMBAGO

It is a kind of musculoskeletal disorder.^{4,12,28} There can be many episodes like acute; sub-acute or chronic in duration.^{4,12,28} The causes of low back pain can be many.^{4,12,28}

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A traumatic event may give rise to muscular pain or may be vertebral fractures there can be disc degeneration between the vertebrae or a spinal disc herniation, osteoporosis, any kind of infection or tumour.^{4,12,28}

TYPES OF PAIN

Radicular Pain

The path physiology of radicular pain is not very clear. Couple of opinions says neural compression with axonal dysfunction, ischemia, inflammation and biochemical influences the factors for it.^{4,20,12,18} nerve root compression, increased vascular permeability can be of one reason. elevated fluid pressure and impede capillary blood flow play a significant role in causing this kind of pain.^{4,20,12,18}

Facet Joint Pain

Various compressive loads with the intervertebral disc like other synovial joints lead to stiffness and degeneration^{4,20,12} Degeneration of this kind also leads to osteoarthritis of the facets.^{4,20,12,18}

Sacroiliac Pain

This joint receives primary innervations from first four sacral nerves.^{4,20,12,18}

Muscular Pain

Pain receptors got activated when any contractual unit exposed to biomechanical loading.^{4,20,12} Over contraction and spasm also shortens up length of muscles. injured muscles generally fall in category of myofascial pain.^{4,20,12, 18}

Neurophysiology

The pain signals are conveyed through peripheral neural pathways.^{4,14,17} Pain stimulus is generally generated by tissue damage to levels far greater than any other threat^{4,14,17}. Peripheral pain transmission is done that leads to releasing of amino acids.^{4,14,17} With process of transduction afferent stimuli are converted to neural messages and furthermore communicated to cerebral cortex.^{4,14,17} Pain message is communicated through unmyelinated and delta fibres.^{4,20,4,14,17}

Pathophysiology of Pain

Inflammation or irritation of any of the various structures of back like bones, nerves, discs, ligaments, muscles may cause pain.^{4,20,4,14,17} Pain can be nociceptive, neuropathic or idiopathic in origin.^{4,20,4,14,17} Nociceptive pain is usually acute .it originated from the activation of

peripheral primary afferents. Myelinated and unmyelinated fibres conduct impulses evoked by a stimulus and transmit sensation called pain.^{4,20,4,14,17} Spin thalamic and spin reticular horns of the spinal cord are excited by the nociceptive afferents ascending contra laterally.^{4,20,4,14,17} this is done by mediating neurotransmitters such as glutamate, aspartame, substance P and calcitonin gene related peptide. This stimulus then reaches brain through axons.^{4,20,4,14,17} Direct spinothalamic tract projections to ventral posterior lateral thalamus excite neurons with connections to primary and secondary somatosensory and insular cortex.^{4,20,4,14,17} Damage or irritation of peripheral nerves or central nervous system leads to neuropathic pain. This does not require any input for its maintenance. It appears as chronic pain. When there is no known pathology for pain then it is referred to as idiopathic. It is also referred to as psychogenic pain.^{4,20,4,14,17}

NEUROTIC DISORDERS

Freudian Approach

According to Sigmund Freud anxiety “would be bound to throw a flood of light on our whole mental existence.” He gave 2 theories on anxiety. In the earlier one he said libido builds up until some pleasurable activity discharges it.^{1,2,14,23} This undercharged energy is anxiety and remains even when unacceptable object is consciously removed.^{1,2,14,23} There can be few symptoms of Anxiety like Restlessness, Fatigue, Lack of concentration, Irritability, Muscle tension, Disturbed sleep etc.^{1,2,14,23}

Types of Anxiety Disorder

Panic disorder^{2,23}

Agora phobia^{2,23}

Social phobia^{2,23}

Over anxious disorder^{2,23}

Specific phobia^{2,23}

Obsessive compulsive disorder^{2,23}

Separation anxiety disorder^{2,23}

DEPRESSION

This is very normal to get highs and lows in life feeling low is very normal part of human emotions.^{2,14,23} There has to be a clear distinction between a normal mood and clinical state. The difference from clinical depression is made by most clinicians by intensity, severity, duration of the emotions.^{2,14,23} Depression is screened in all races, social groups and ethnic groups.^{2,14,23} A large number of instruments were developed to analyse prevalence and incidence of depression, life histories, stressors and what happens with depression.^{2,14,23} complete analysis of families of people who suffer from depression is also incorporated along with the person who suffers from it.^{2,14,23}

Cognitive Theory

According to the cognitive theory of depression it results from various distortions present in persons who are inclined to have depression.^{2,14,23} They are referred to as depressogenic schemata and this receives data from both internally as well as externally in a way that is affected by past experiences.^{2,14,23}

Learned Helplessness

The uncontrollable events are connected to depressive phenomena. Its application on human beings' internal casual explanations are thought to explain a produce loss of self-esteem after external adverse events.^{2,14,23} Improvement in depression is possible by learning control on self as well as environment.^{2,14,23}

Hysteria

This disorder arises from intense anxiety.^{2,14,23} Main characteristics are person is unable to have control on his emotions, leading to emotional outburst and often by sudden seizures.^{2,14,23} According to psychological theory there can be many unresolved conflicts within the individual.^{2,14,23} It is very important to be calm and not create panic while experiencing this kind of situation. Generally, sufferers cause panic among others which further creates problems. So, identification of the factor which causes this problem is very important.^{2,14,23}

Symptomatology

Heaviness in limbs, cramps, abdominal problems, breathing difficulty, congestion in chest, palpitation, feeling of foreign body loaded in the throat, neck swelling, attempt to shout.^{2,14,23} In severe cases, clinicians have also noted wild and painful cries, violent movement, person also wants to cry in despair and it is felt that they are unable to do so causing further anxiety.^{2,14,23} Generally, there is a weakness of will, needing love and sympathy. The episode can last for many days and weeks. The patient in this episode may look like he is in deep sleep but muscles are not usually relaxed. Current psychiatric terminology distinguishes two types of disorder that were previously labelled 'hysteria': somatoform and dissociative.^{2,14,23}

Neurasthenia

Also known as Chronic Fatigue Syndrome or Fibromyalgia, it means the weakness of nervous system.^{2,14,23} It is characterised by irritability, problem in concentration, feeling of worry, hypochondria.^{2,14,23} Neurasthenia is a disorder triggered by stress or anxiety.^{2,14,23} Symptoms include feeling of pain and numbness in various parts of body, feeling of fatigue and fainting, feeling of chest pain with the increase in heart beat, even tachycardia, individual may have cold hands and feet. There can be heavy sweating for no reason.^{2,14,23} Neurasthenia can occur with other psychological disorders. The pain in neurasthenia affects many muscles around the body and the pain is usually worse in the upper part of the back. People complain of waking up early in the morning, completely unrefreshed, feeling very rigid in the morning and tingling sensation in the fingers, inability to concentrate, feeling of forgetfulness.^{2,14,23}

The neurotic disorders are distinct from psychotic disorders in that the individual with neurotic symptoms has a firm grip on reality, and the psychotic patient does not.^{2,14,23} There are several major traditional categories of psychological neurosis. These include:

- **Anxiety neurosis:** Mental illness defined by excessive anxiety and worry, sometimes involving panic attacks and manifesting itself in physical symptoms such as tremor, chest pain, sweating, and nausea.²³
- **Depressive neurosis:** A mental illness characterized by a profound feeling of sadness or despair and a lack of interest in things that were once pleasurable.²³
- **Obsessive-compulsive neurosis:** The persistent and distressing recurrence of intrusive thoughts or images (obsessions) and repetitive behaviours or mental acts (compulsions).²³
- **Somatization (formerly called hysterical neurosis):** The presence of real and significant physical symptoms that cannot be

explained by a medical condition, but are instead a manifestation of anxiety or other mental distress.²³ • Neurasthenia: A condition that is characterized especially by physical and mental exhaustion usually with accompanying symptoms (as headaches, insomnia, and irritability), is believed to result from psychological factors (as depression or emotional stress or conflict), and is sometimes considered similar to or identical with chronic fatigue syndrome.^{2,14,23}

Psychology of Pain

Pain experiencing is a strange phenomenon which includes psychological, cultural and somatic components.^{14,4,17} Feelings are very important than behaviour of individuals as attention is responsible for perception and symptomatology reported by individual.^{14,4,17} Two more principles play a very important role in pain concept one is learnt pain behaviour as well as how individual is responding to illness.^{14,4,17} Pain is very much subjective and is different in case of every individual depending on earlier experiences in past as well as current life.^{14,4,17}

Pain Due to Stress

Difference between demands and capability of an individual is stress. During adaptation of any process stress can be triggered.^{14,4,17} The concept consists of stress, emotion and coping which lead to a full model. Whenever a person is in stress it leads to emotional arousal and individual evaluates how he can manage the situation.^{14,4,17} Moderate stress always improves the capacity of individual. Overusing the capacity also leads to physical symptoms. the term psychosomatic symptoms is commonly used in stating that symptoms caused by stress may also lead to psychological symptoms.^{14,4,17}

REVIEW OF LITERATURE

Relationship between Back Pain and Depression (Currie and Wang, 2004). Is it difficult for you to understand the reason for your bad moods and feeling less energetic? Do you like to be lonely? Have you ever noticed that your peers and group members are backing away from spending time with you? Are day to day activities becoming more difficult for you? If the answer is yes to any of the above questions then you may be suffering from depression. Chronic back pain and depression are two of the most common problems among modern day lifestyle which clinicians come across. But very few studies have compared the relation between them. There can be a close relation between stress and anxiety arising out of chronic pain and it can be a major cause of depression. It is already estimated by many researchers in different studies that depression and anxiety occur in twenty to fifty percent of the patients suffering from chronic back pain. Major depression is thought to be four times higher in people with chronic back pain than in general population.⁷

A study by spine health specialists supports the said statement (William Dear Dorff, 2007). One of the research projects conducted shows that sixty one percent of people who have back pain also have depression in some form. Clinical evidence also estimates that depression is found to be twenty to thirty percent among people who have chronic pain. A medical advisor and a psychologist also opine that this is not unusual that people suffering from chronic back pain also have depression, A person who suffers from consistent back pain is also affected in three dimensions that are physical, mental and emotional. This kind of situation generally makes the life of person very difficult in everyday living. What increases the curiosity is that people those themselves come to clinicians and express that they are depressed which further implies that: A. That whether people suffering from back pain are under diagnosed with depression. B. All

clinicians who are treating such patients suffering from back pain must look for signs or symptoms of depression.⁹

A study by (Strunin & Boden ,2004). He analysed the family consequences of back pain. During evaluation they see a lot of limitations on family and social roles. People at physical level are unable to do household works, while taking care of kids and entertainment with family. In many cases family and kids took over the responsibility of family which usually used to carried by the person who is suffering from consistent back pain. These kinds of situations make people who are suffering from back pain depressed and they have direct or indirect stress in their family lives.²⁵

(Polatin,1993). evaluated 39 percent of chronic low back patients have pre-existing depression.studies are focussing on how neurotic variables like anxiety, depression are related to occurrence of back pain problem.²¹

(Linton ,2000). postulated that psychological factors were found to have increased risk for pain problems. Symptoms like depression, anxiety, the personality of individual, thought pattern and process can impact a spinal surgery results.¹⁶

(Bao, Sturm & Croghan, 2003). Patients who are suffering from consistent back pain and depression approached clinician's twenty percent more than group of non-depressed patients.³

(Steve, I.,et al.,2009).studied methodically the total number of people who are old suffering from pain are also likely to undergo depression. From the complete set of people undergoing pain the two important forecasters of clinical depressive symptoms are the social networking and the acceptability of the individuals and functional status. An elaboration into the study should look for positive improvement if made on social networking as well as functional status as to whether this is going to lessen depressive symptoms in older patients or not.²⁷

DISCUSSION AND CONCLUSION

(Tsang,2008). Growing body of research concerning the prevalence and correlates of chronic pain conditions and their association with mental disorders, cross-national research on age and gender differences is limited. The present study reports the prevalence by age and gender of common chronic pain conditions (headache, back or neck pain, arthritis or joint pain, and other chronic pain) in 10 developed and 7 developing countries and their association with the spectrum of both depressive and anxiety disorders.¹

(Linton ,2005). This study aimed to conduct a comprehensive evaluation of background, individual and workplace psychological risk factors to investigated their relationship with spinal pain. Because there is some doubt as to whether the results of cross-sectional findings hold in longitudinal studies, a prospective study was superimposed upon a cross-sectional design of the effects of psychological variables on back pain and function to determine, whether similar results are obtained. Participants were workers randomly selected from the general population, where 372 had not experienced pain during the past year, and 209 had experienced considerable pain problems. A cross-sectional comparison of these groups using multivariate statistics indicated that the most potent risk factors were psychological distress (odds ratio=13.2) and poor function (odds ratio=6.4). Much smaller levels of risk were found for perceived workload, gender and foreign birth. Those participants with no pain were followed for one year to determine development of a spinal pain problem. Although few participants developed a significant pain problem, the prospective analyses showed that psychological distress (odds ratio=2.2), catastrophizing (odds ratio=3.0), and workload (odds ratio=2.3) produced the highest odds ratios. Taken together these results underscore the need for a multidimensional view of the

development of pain disability. Moreover, individual psychological factors such as distress and catastrophizing as well as work place factors like work load were found to be highly related to the development of back pain in a sample of workers from the general population. The cross-sectional and prospective results were similar in character and demonstrate that cross-sectional studies may provide valuable information. Because psychological variables were relevant very early on, these factors may be important targets for pain prevention programs.²⁶

(Nicole, Kelly & Paul,2007). Researchers are of the opinion that the main aim of the study was to provide estimate of prevalence of people suffering from back pain also having insomnia. Understanding of sleep is an important parameter in understanding the quality of life, so there is great interest in sleep disturbance. More than seventy patients who are suffering from back pain and seventy people who are not suffering from any kind of pain with their ages matching completed a set of questionnaires which focused to signify sleep, pain and specific psychological variables. The results that were obtained show fifty-three people suffering from back pain have clinical insomnia and the sample was also compared to the people who have no kind of pain, the result was only three percent. When we have got direct correlation of insomnia with back pain and all the variables of interest like intensity of pain, pain ratings that are sensory, affective ratings of pain, anxiety general in nature, depression and anxiety related to health. Affective ratings of pain and anxiety related to health have clearly predicted the level of clarity of insomnia in the sample. Affective ratings of pain are an important predictor of severity in insomnia when the intensity of pain and effects of depression and anxiety are controlled. In the future, we can also study anxiety related to health and its role in development of insomnia related to chronic back pain.¹⁹

(Geisser, Roth & Robinson, 1997) have tried to study the efficacy of two self-report questionnaires, Beck Depression Inventory and Centre for Epidemiological Studies Depression Scale, to differentiate between patients suffering from chronic back pain with and without depression. During the study they have included hundred and thirty-two patients with chronic back pain, out of which forty-four were diagnosed as patients suffering from major depression. Both the scales have good validity as well as predictivity. The subjects were also interviewed by a clinical psychologist to establish the occurrence or lack of major depression. Results have proved with the help of both questionnaires that they are able to differentiate between the people suffering from major depression and the ones who are not.¹³

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