

**TRIBHUVAN UNIVERSITY**  
**INSTITUTE OF MEDICINE**  
**MAHARAJGUNJ NURSING CAMPUS**  
**Bachelor of Nursing Science**  
**Teaching and learning Practicum (BN 21)**

<b>Subject</b>	:Adult Health Nursing –I
<b>Course no</b>	:BSN 09
<b>Unit</b>	:9, Disorder of Nervous system
<b>Topic</b>	:Trigeminal neuropathy, Bell’s palsy
<b>Date and Time</b>	:2076/11/16 at 9am
<b>Duration</b>	:60 minutes
<b>Place</b>	:B.sc nursing 2 <sup>nd</sup> year classroom, Maharajgunj Nursing Campus
<b>Level of learner</b>	:B.sc nursing 2 <sup>nd</sup> year
<b>No. of learner</b>	:40
<b>Name of Student Teacher</b>	:Sujata Devkota, BNS 2 <sup>nd</sup> year, Roll no.: 18
<b>Name of Supervisor</b>	:Respected Madam, Lecturer Gayetri Darshandhari, MNC,IOM,TU
<b>Teaching learning Method</b>	:Interactive Lecture, brainstorming
<b>Teaching Learning Resources:</b>	Multimedia projector, Whiteboard, Newsprint

**General Objective :** At the end of this session, B.Sc nursing 2<sup>nd</sup> year students will be able to explain trigeminal neuropathy and bell’s palsy.

SN	Specific Objectives	Contents	Time	T/L Method	T/L media	Evaluation
		-Greeting -Attendance -Topic introduction -Objectives -Review of previous class -Pretest	3min	Brain storming and questionnaire	White board	
	At the end of this session, B.Sc Nursing 2 <sup>nd</sup> year students will be able to :					
1	State nursing management of peripheral neuropathy.	Nursing management of peripheral neuropathy.	2min	Interactive lecture	Multimedia projector	What are the nursing management of peripheral neuropathy?
2	Define Trigeminal neuralgia.	Definition of trigeminal neuralgia.	2min	Brain storming Interactive lecture	Multimedia projector	What is trigeminal neuralgia?
3	State the etiology/risk factors of trigeminal neuralgia?	Etiology /Risk factors	3min	Interactive lecture	Multimedia projector	What are the etiological/risk factors of trigeminal neuralgia?
4	Explain pathophysiology of trigeminal neuralgia.	Pathophysiology	4min	Lecture News print	Multimedia projector	What is the pathophysiology of trigeminal neuralgia?
5	List clinical manifestation of trigeminal neuralgia.	Clinical manifestation	3min	Interactive lecture (Discussion )	Multimedia projector	What are the clinical manifestation of trigeminal neuralgia?
6	Enlist diagnostic	Diagnostic evaluation	2min	Interactive	Multimedia	What is the

	evaluation for trigeminal neuralgia.			lecture.	projector	diagnostic evaluation for trigeminal neuralgia?
7	Explain management of trigeminal neuralgia.	Management: -Medical -Surgical -Nursing	10min	Interactive Lecture	Multimedia projector	How can we manage trigeminal neuralgia?
8	Introduce bell's palsy.	Introduction	2min	Lecture	Multimedia projector	What is bell's palsy?
9	State epidemiology of bell's palsy	Epidemiology	2min	Lecture	Multimedia projector	What is the epidemiology of bell's palsy?
9	State etiology of bell's palsy.	Etiology	2min	Interactive Lecture	Multimedia projector	What are the etiological factors of bell's palsy?
11	List clinical features.	Clinical features	4min	Brain storming and Lecture	Multimedia projector with figures	What are the clinical features of bell's palsy?
12	State diagnostic measures.	Diagnostic measures	2min	Lecture	Multimedia projector	What are the diagnostic measures of bell's palsy?
13	Explain management of bell's palsy.	Management: -Medical -Surgical -Nursing	10min	Interactive lecture	Multimedia projector	What is the nursing management of bell's palsy?
14	State complication of bell's palsy.	Complications	2min	Interactive lecture	Multimedia projector	What are the complications of bell's palsy?
		<ul style="list-style-type: none"> <li>• Post test</li> <li>• Summary</li> <li>• Assignment</li> <li>• References</li> </ul>	3min	Questionnaires	Multimedia projector	

## Trigeminal neuralgia

### ▪ Definition

Neuralgia-it is the name given to severe pain coming from a nerve.

Branches of Trigeminal nerve: ophthalmic, maxillary and mandibular.

Also known as the Suicide Disease or Fothergill's disease, described as among the **most painful conditions** known to mankind.

It is associated with involuntary movement of facial muscles so there is sudden closing of eye or twitching of mouth so it was formerly called **Tics Douloureux**(painful twitch).

✚ Sudden usually unilateral severe, brief, stabbing, recurrent episodes of **pain** in the distribution of one or more branches of the **trigeminal nerve**.

- International association for study of pain

Trigeminal neuralgia is uncommon, with an estimated prevalence of 155 cases per million persons. In patients over 75 years old it can occur in up to 1 per 1000 patients. Females are affected twice as often as males.

### ▪ Etiology/Risk factors

1.Exact cause is unknown, but degenerative or viral origin suspected.

2.Intrinsic and extrinsic lesions within the nerve itself.

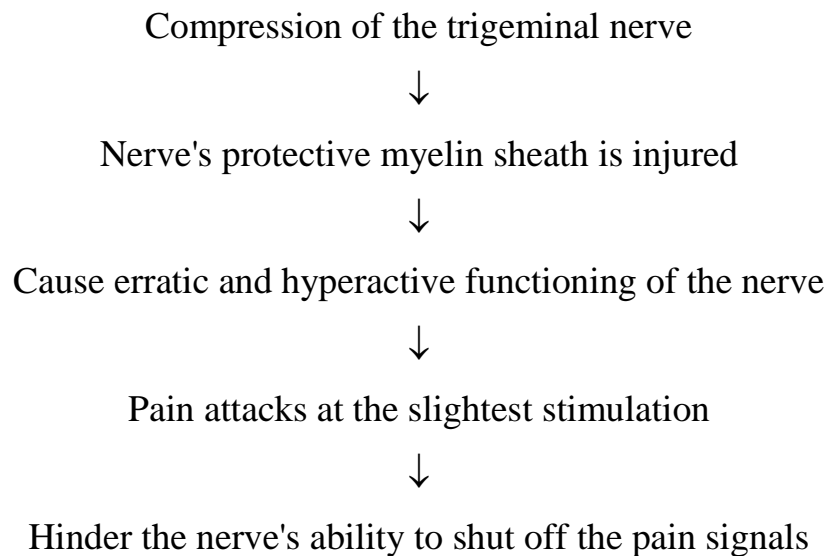
- Intrinsic lesion: gross abnormalities of the axon or myelin, as may occur with multiple sclerosis.
- Extrinsic lesion: are outside the trigeminal root and include mechanical compression by tumors, vascular anomalies, dental abscesses, or jaw malformation.

3. Risk factors

- Nerve compression by tortuous arteries of the posterior fossa blood vessels.

- Kidney insufficiency
- Herpes virus infection, syphilis
- Infection of teeth and jaw
- Trauma on facial nerve
- Chemical irritation

▪ **Pathophysiology**



▪ **Clinical Manifestation**

- Episodes of intense facial pain lasting less than 30-60 seconds, ending abruptly and rarely relieved by analgesics.
- Tactile stimulation, such as touch and facial hygiene, and even talking, shaving and brushing teeth may trigger attack. There are certain areas called trigger points located on cheek, lip, nose or buccal mucosa, where slightest touch immediately starts paroxysm or episode.
- Wind, high pitched sounds, loud noises such as concerts or crowds, chewing, and talking can aggravate the condition
- However, in many patients the pain is generated spontaneously without any apparent stimulation.

- **The attacks feel like stabbing electric shocks, burning, pressing, crushing, exploding or shooting pain that becomes intractable.**
- Individual attacks usually affect one side of the face at a time, lasting from several seconds to a few minutes and repeat up to hundreds of times throughout the day.
- This first episode of pain may last days, weeks, or months and then, typically, the pain stop for a while.

Note: Pain from trigeminal neuralgia is so intense that patient ponders suicide.

- **Diagnostic evaluation**

- History taking: triggering stimuli and site of the pain.
- Neurological examination
- Blood test to assess renal function and glucose level.
- Angiography, CT scan, and MRI can identify a causative lesion.

- **Management**

### **Medical Management**

- Anticonvulsant drug Such as Carbamazepine (tegretol) and gabapentin (Neurontin).  
Carbamazepine relieve pain by reducing transmission of pain impulses at certain nerve endings.
- Phenytoin can be used for pain management. (Liver impairment may result from administration of both carbamazepine and phenytoin, liver enzyme must be monitored before and during therapy).
- Baclofen (lioresal) is a skeletal muscle relaxant that may be used alone or in conjunction with anticonvulsant.
- Over the counter analgesics: aspirin ,ibuprofen

## Surgical Management

If pharmacological management fails to relieve pain, a number of surgical options are available. Although these procedures may relieve facial pain for few years, recurrence and complications are high. The choice of procedure depends upon patient's preference and health status.

### 1. Rhizotomy:

A rhizotomy (rhizolysis) is a procedure in which nerve fibers are damaged to block pain. A rhizotomy for trigeminal nerve always causes some degree of sensory loss and facial numbness. Several forms of rhizotomy are available to treat trigeminal neuralgia.

- **Radiofrequency thermal lesioning (also known as "RF Ablation" or , 2** is most often performed on an outpatient basis. The individual is anesthetized and a hollow needle is passed through the cheek through the same opening at the base of the skull where the balloon compression and glycerol injections are performed. The individual is briefly awakened and a small electrical current is passed through the needle, causing tingling in the area of the nerve where the needle tips rests. When the needle is positioned so that the tingling occurs in the area of TN pain, the person is then sedated and the nerve area is gradually heated with an electrode, injuring the nerve fibers. The electrode and needle are then removed and the person is awakened. The procedure can be repeated until the desired amount of sensory loss is obtained; usually a blunting of sharp sensation, with preservation of touch. Approximately half of the people have symptoms that reoccur three to four years following RF lesioning. Production of more numbness can extend the pain relief even longer, but the risks of anesthesia dolorosa also increase.
- **Microvascular decompression (MVD) is** the most invasive of all surgeries for TN, but also offers the lowest probability that pain will return. About half of individuals undergoing MVD for TN will experience recurrent pain within 12 to 15 years. This inpatient procedure, which is performed under general anesthesia, requires that a small opening be made through the mastoid bone behind the ear. While viewing the trigeminal nerve through a microscope or endoscope, the surgeon moves away the vessel (usually an artery) that is compressing the nerve and places a soft cushion between the

nerve and the vessel. Unlike rhizotomies, the goal is not to produce numbness in the face after this surgery. Individuals generally recuperate for several days in the hospital following the procedure, and will generally need to recover for several weeks after the procedure.

- **Balloon compression** works by injuring the insulation on nerves that are involved with the sensation of light touch on the face. The procedure is performed in an operating room under general anesthesia. A cannula is inserted through the cheek and guided to where one branch of the trigeminal nerve passes through the base of the skull. A soft catheter with a balloon tip is threaded through the cannula and the balloon is inflated to squeeze part of the nerve against the hard edge of the brain covering (the dura) and the skull. After about a minute the balloon is deflated and removed, along with the catheter and cannula. Balloon compression is generally an outpatient procedure, although sometimes the patient may be kept in the hospital overnight. Pain relief usually lasts one to two years.
  
- **Glycerol injection** is also generally an outpatient procedure in which the individual is sedated with intravenous medication. A thin needle is passed through the cheek, next to the mouth, and guided through the opening in the base of the skull where the third division of the trigeminal nerve (mandibular) exits. The needle is moved into the pocket of spinal fluid (cistern) that surrounds the trigeminal nerve center (or ganglion, the central part of the nerve from which the nerve impulses are transmitted to the brain). The procedure is performed with the person sitting up, since glycerol is heavier than spinal fluid and will then remain in the spinal fluid around the ganglion. The glycerol injection bathes the ganglion and damages the insulation of trigeminal nerve fibers. This form of rhizotomy is likely to result in recurrence of pain within a year to two years. However, the procedure can be repeated multiple times.
  
- **Stereotactic radio surgery (Gamma Knife, Cyber Knife)** uses computer imaging to direct highly focused beams of radiation at the site where the trigeminal nerve exits the brain stem. This causes the slow formation of a lesion on the nerve that disrupts the transmission of sensory signals to the brain. People usually leave the hospital the same day or the next day



following treatment but won't typically experience relief from pain for several weeks (or sometimes several months) following the procedure. The International Radio Surgery Association reports that between 50 and 78 percent of people with TN who are treated with Gamma Knife radio surgery experience "excellent" pain relief within a few weeks following the procedure. For individuals who were treated successfully, almost half have recurrence of pain within three years.

**2. Neurectomy:** A neurectomy (also called partial nerve section), which involves cutting part of the nerve, may be performed near the entrance point of the nerve at the brain stem during an attempted microvascular decompression if no vessel is found to be pressing on the trigeminal nerve. Neurectomies also may be performed by cutting superficial branches of the trigeminal nerve in the face.

## **Nursing Management**

### **Assessment:**

- Take complete history of the patient, of pain, including duration, severity, and aggravating factors.
- Assess for nutritional status and hydration.
- Assess for anxiety and depression, including problems with sleep, social interaction, coping ability/skills.

### **Nursing diagnosis:**

- Chronic pain related to compression of nerve.
- Imbalanced nutrition , less than body requirements related to pain during eating.
- Disturbed sensory perception related to disease condition.
- Powerlessness related to lack of control over painful episodes.
- Knowledge deficit related to unknown disease condition.

## **Expected outcomes:**

- Patient will experience pain relief.
- Nutritional status will be maintained.
- Sensory perception will be improved.
- Control over painful episodes will be improved
- Knowledge level will be upgraded.

## **Nursing interventions**

### **1. Relieving pain:**

- Review with patient potential trigger factors to minimize painful episodes, (shaving, chewing, washing face) and develop individualized methods of coping with identified triggers, such as avoiding too hot and too cold foods as they can trigger pain, providing cotton pads and room temperature water for washing face ,rinsing mouth with mouth wash instead of brushing.
- Encourage the patient to take medications regularly, including rescue medications for breakthrough period.
- Help the patient maintain a method of communication without causing pain from talking.

### **2. Maintain adequate nutrition:**

- To maximize nutritional intake, instruct patient to take foods and fluids at room temperature and to chew on the unaffected side.
- Have the patient consult with the dietitian for appropriate meal, texture and composition.
- Encourage small frequent meals to avoid fatigue and pain
- Cautioned patient not to chew on the affected side.
- Observe patient for any difficulty in eating or swallowing foods.
- Advise about use of nutritional supplements if indicated.

### **3. Enhancing protection**

- Assess corneal reflex .
- If reflex is absent , explain patient that sensation of foreign body in eyes will be absent. So, check eyes at least 3-4 times a day.
- Do not rub eyes instead, check eyes in front of mirror.
- Encourage patient to instill artificial tears every 4 hourly.

- Encourage patient to avoid very hot and cold foods as the sensation is altered and they can aggravate pain.

#### **4. Increasing control:**

- Teach relaxation exercises, such as guided imagery, to relief tension.
- Involve patient indecision making regarding treatment and nursing care.
- Encourage patient to get involved in activities of daily living during pain free condition.
- Encourage participation in support groups, and facilitate a therapeutic relationship with the health care provider

#### **4. Patient education and health maintenance:**

- -Educate the surgical patient regarding self-care after denervation procedure.
- -Instruct the patient to chew on unaffected side to avoid biting tongue, lips and inside of mouth.
- -Instruct the patient who wears dentures that jaw muscle will regenerate over time, avoid having dentures refitted.
- -Instruct the patient to maintain dental hygiene and regular checkups because pain will not felt with caries.
- -Ask the patient if his face is numb, and instruct him/ her to report any changes in sensation.

#### Postoperative care:

- Neurological assessment to evaluate for facial or motor deficit.
- Eye is assessed of irritation. Artificial tears may be prescribed to prevent dryness.

#### ▪ **Complications**

- Anorexia and weight loss
- Dehydration
- Anxiety, fear
- Depression, social isolation, and suicidal ideation in extreme cases.

## **G Facial Paralysis)**

### **▪ Introduction:**

Bell's palsy is defined as unilateral inflammation of seventh cranial nerve which results in weakness and paralysis of facial muscles of the affected side.

Sir Charles Bell of England first described acute paralysis of 7<sup>th</sup> cranial nerve in 1821 .

Bell's palsy is a type of acute peripheral paralysis of infra temporal region of 7<sup>th</sup> cranial nerve. It can affect anyone at any age and sex, however most commonly affect pregnant women, DM and influenza.

### **▪ Epidemiology**

- It is the most common cause of acute unilateral facial paralysis- 60 to 75%
- The annual incidence of Bell's palsy is approximately 15-30 cases/1 lakhs
- Incidence increases with age and in the pregnancy during 3<sup>rd</sup> trimester.
- Recurrence rate is 4-14% , associated with a family history.
- Diabetes has a 29% higher risk of being affected than non-diabetics.
- It mostly occurs unilaterally and right side is affected most(65%)
- Only 23% of patients accounts for bilateral facial paralysis, among which most of the cases have GB syndrome, Sarcoidosis, Lyme disease, infectious or neoplastic meningitis or neurofibroma.
- Both sex are affected equally ,more frequent at younger age.

### **▪ Etiology:**

- The exact cause is unknown.
- Possible causes include autoimmune diseases, vascular ischemia.
- Tumor ,trauma on facial nerve.
- Viral diseases like herpes zoster, simplex
- Gullian barre syndrome(GBS).

▪ **Clinical features:**

Most of the clients experience a viral infection eg. Upper respiratory infections 1-2 weeks before onset of symptoms.

- Facial paralysis: Acute onset of unilateral upper and lower facial paralysis (over a 48 hour period). Paralysis of ipsilateral side of face from vertex of scalp to chin; facial muscle weakness throughout forehead, cheek, and chin.
- Mouth: Diminished taste from anterior 2/3<sup>rd</sup> of tongue, drooling from affected side, lagging of angle of mouth
- Eye: decreased blink reflex, decreased or increased lacrimation, inability to close eyes, painful eye sensation, photophobia, drooping of eyelid.
- Hyperacusis on the affected side.

▪ **Diagnostic procedure**

- History taking: determine previous illness, onset of paralysis
- Physical examination: evaluation of 7<sup>th</sup> cranial nerve function and corneal sensation
- Neurological assessment: complete examination of all of the cranial nerves, sensory and motor testing, and cerebellar testing
- Blood test for sugar and kidney function test.
- Lumbar puncture(LP) for CSF analysis.
- CT scan and MRI
- Electromyography and nerve conduction velocities

▪ **Management:**

**Medical management:**

The main goal of treatment is to maintain muscle tone of the face and to prevent/minimize denervation. Spontaneous recovery occurs with in 3-5 weeks in most patients.

- Steroid therapy(prednisolone)-reduce inflammation and edema thus reduce vascular compression and permits restoration of blood circulation to the nerve. Early administration has good prognosis.  
Dose: 60-80 mg /day in divided doses initial 4-5 days, then taper over next 7-10 days
- Analgesics-NSAIDS for facial pain
- Hot/warm compression in the involved side- to promote comfort and promotes blood circulation.
- If there is difficulty in closing eye, proper eye care is essential to promote moisture and lubrication.
- Physiotherapy : Facial muscle exercises( wrinkling the forehead / raise eyebrows, squeeze eyes shut, purse lips and blowing out the cheeks and whistling with the aid of mirror to prevent muscle atrophy), massaging the face several times a day (using gentle upward motion to maintain muscle tone)
- Electrical stimulation in face to prevent atrophy of muscle.
- Surgical exploration in case of tumor.
- Biofeedback techniques is very effective when used with other therapy.

## **Surgical Management**

Only indicated when other measures fail.

Anastomosis of CN VII to CNXI or CNXII

Closure of eyelid (tarsorrhaphy).

## **Nursing management:**

### **1)Assessment:**

-Medical history: risk factors and any related etiological factors

-Physical examination: pain ,disturbed body image, corneal integrity, nutritional status, patient's knowledge level

## **2)Diagnosis**

- Pain on the affected side related to disease condition.
- Disturbed visual perception related to impaired corneal integrity.
- Disturbed body image altered facial expression secondary to bell's palsy.
- Knowledge deficit related to newly diagnosed disease.
- Risk for impaired nutritional status related to difficulty in chewing secondary to bell's palsy.

## **3)Expected outcome**

- Patient will experience pain relief.
- Corneal integrity will be maintained.
- Patient will demonstrate positiveness towards body image.
- Patients level of understanding will be improved.
- Patient's nutritional status will be maintained.

## **4)Nursing intervention**

- Relieving pain

- Administer and teach to the visitors regarding administration of corticosteroids and analgesics.
- Teach to use moist heat on face and explain its advantages.
- Perform and teach patient to perform facial massage to reduce facial stiffness.

- Protecting corneal integrity

- Administer artificial tears and ointments as prescribed and teach about the technique of administration.
- Eye patches can be used at nights as eye doesn't close completely and blink reflex is diminished.
- Use sunglasses or goggles to protect eyes.
- Inspect eyes for redness or discharge
- Advise patient to report pain on eye immediately.

- Enhancing body images

- Encourage patient to explore feelings regarding disturbance to body images.
- Encourage to use mirror as a means to obtain feedback on actual versus perceived appearance.
- Don't give false reassurance.

- Diet and nutrition
  - Instruct patient to chew on the unaffected side of mouth.
  - Provide soft and nutritionally balanced diet.
  - Give frequent mouth care, being particularly careful to remove residue of food.
  
- Patient education
  - Instruct patient to use sunglasses to prevent from irritation, wind, dust particles etc entering into eye
  - Wear protective shield on affected eye at night.
  - Teach to close the paralyzed eye manually before going to sleep.
  - Use medications properly as prescribed.
  - Keep face warm.

Note: Test motor components of facial nerve (VII) by assessing patient's ability to whistle, smile, purse lips, wrinkle forehead, close eyes and facial asymmetry, ability to handle secretions, foods, fluids, ability to blink eyes, clear speaking, effect of altered appearance

**❑ Complications:**

- Excessive dryness may lead to infections, ulcers and even blindness.
- Synkinesis- a condition in which moving one body part causes another to move involuntarily. For example, eye may close while smiling.



## **Summary**

Trigeminal neuralgia (TN) is a condition of the fifth cranial nerve that is characterized by paroxysms of sudden pain in the area innervated by any of the three branches of the trigeminal nerve. It is an intensely painful neurological condition that affects one or more branches of trigeminal nerve characterized by sudden severe pain described as –stabbing; shooting or electrical shock like pain in the face, impaired function of affected part, loss of deep tendon reflex etc. Nursing management includes relieve pain, monitor adequate nutrition, patient education, etc.

Bell's palsy is an acute peripheral facial paralysis of the infratemporal portion of the 7<sup>th</sup> cranial nerve ie facial nerve. It mostly occurs unilaterally and right side is affected most(65%). The exact cause is unknown, however various viral infections, trauma and tumor to 7<sup>th</sup> cranial nerve, Gullian barre syndrome etc are some etiological factors. Steroids, analgesics use, warm compression, electrical stimulation ,biofeed back etc are some treatment modalities. Nursing management includes managing pain, maintaining corneal integrity, enhancing positive body image, diet and patient education.

**Plan for next class:** we will discuss about Gullian Barre Syndrome

**Home assignment:** Review today's class.

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**Test construction**

**Subject : Adult Health Nursing I Theory**

**FM-10**

**Program :B.Sc Nursing**

**PM-4**

**Level : 2<sup>nd</sup> year**

**Time: 22min**

**Answer the following questions on your own words as far as possible**

Objective questions

Fill in the blanks with appropriate answer.

(2×1=2)

1.Trigeminal neuropathy is an intensely painful neurological condition that affects one or more branches of ..... nerve.

2.Bell's palsy is an acute peripheral facial paralysis of the infratemporal portion of the ..... nerve.

Subjective questions.

1. List the causes of trigeminal neuropathy. (3)

2. Write down the nursing management of a patient with bell's palsy. (5)

## References:

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