**TRIBHUWAN UNIVERSITY**

**INSTITUTE OF MEDICINE**

**POKHARA NURSING CAMPUS**

**RAMGHAT-12, POKHARA**

**Lesson Plan on: 0steoporosis**

**Submitted to: Submitted by:**

Respected madam, Sunita kushawaha

Saphalta Shrestha Roll no: 22

Lecturer BNS 2nd year

Lesson plan on osteoporosis

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| Name of student teacher: Sunita kushawaha |
| Subject: Adult Health Nursing I |
| Unit: Common health problems of middle Adult |
| Topic: Physical problem (osteoporosis) |
| Date: 2079- 11- |
| Venue: BNS 1st year |
| Time: |
| Duration: 55 minutes |
| Number of participants: 38 |
| Level of participants: BNS 2nd year |
| Language: English + Nepali |
| Teaching/ Learning method: Brainstorming, interactive lecture, Discussion |
| Teaching, Learning media: PowerPoint, Whiteboard, poster |
| Name of supervisor: Respected madam,  Saphallta Shrestha |

**General Objective:**

At the end of teaching session, BNS 1st year student will be able to describe about

osteoporosis

**Specific objective**:

At the end of teaching session, BNS 1st year student will be able to:

* define osteoporosis
* list the risk factor of osteoporosis
* explain the pathophysiology of osteoporosis
* describe the sign and symptoms of osteoporosis
* list the diagnostic method of osteoporosis
* explain the management of osteoporosis

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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **SN**  1.  2.  3.  4.  5.  6. | **Specific objectives**  At the end of the teaching session, participants will be able to:  introduce  osteoporosis  list the risk factor of osteoporosis  explain the pathophysiology of osteoporosis  describe the sign and symptoms of osteoporosis  list the diagnostic method of osteoporosis    discuss medical and nursing management of osteoporosis | **Content**   * Greetings * Introduction   . self  . topic   * Attendance * Objectives * pretest     Introduction of osteoporosis  Risk factor of osteoporosis  Pathophysiology of osteoporosis  Sign and symptoms of osteoporosis  Diagnostic method of osteoporosis  Medical and nursing Management of osteoporosis | **Time**  5 min  5 min  7 min  5min  6 min  5 min  15 min | | **Teaching/**  **Learning**  **Method**  Brainstorming  Question Answer  Interactive lecture  Interactive lecture  Interactive lecture+ discussion  Interactive lecture+ discussion  Lecture  Interactive lecture | | **Teaching/ Learning**  **media**  picture  PowerPoint  Powerpoint  PowerPoint  PowerPoint  PowerPoint  PowerPoint | **Evaluation**  What do you know about osteoporosis?  What is osteoporosis?  What are the risk factor of osteoporosis?  What are the pathophysiology of osteoporosis?  What are the sign and symptoms of osteoporosis?  What are the diagnostic method of osteoporosis?  What are the management of osteoporosis? |
| 7.  10. | Summary of topic | Summarization  References  Question  Home assignment  Plan for next class | 5 min  1 min  1 min |  | |  | |  |

**UNIT: 6 Common health problem of middle adult**

* **Physical problem;**
* Cancer
* Osteoporosis
* Diabetes mellitus
* Hypertension
* Coronary artery disease
* Stroke

* **Injuries and accidents**
* **Psychosocial problem;**
* Substance abuse
* Depression
* Suicide

**Middle adult**

Middle adulthood or middle age,begins at age 40 and extend to 59 years old, when both physical and psychological decline become apparent in the average person.

It is the stage seventh of Erikson’s developmental stage.

The task is to cultivate the proper balance of generativity and stagnation.

Middle age is the time relatively good physical and mental health,and maximum command of self and influence over social environment.At work the person has increasing ability to make decision,hold high status jobs and earn a maximum income.

**Features of middle aged adult are:**

* Thinning hair,gray hair
* Wrinkles
* Weight gain
* Varicosities
* Capillary breakage,etc

**Introduction**

Osteoporosis is an age related metabolic disease literally means porous bone in which the bone mineral density is reduce .it occurs when bone lose on excessive amount of their protein and mineral content ,particularly calcium .Bone demineralization result in the loss of bone mass , leading to fragile and porous bone and subsequent fracture . it occurs when rate of bone resorption exceeds the rate of bone formation.

**Incidence**

According to National Osteoporosis Foundation (N.O.F)

* Osteoporosis is currently estimated to affect 44 million U.S. women and men aged 50 or older.
* By 2020, estimated that no. will be exceeding 61 million.
* In 2002 it was estimated over 10 million people had osteoporosis, women accounting for about 80% of cases
* Accounted more than 1.5 million fractures annually including

1. 300,000 hip fractures,
2. 700,000 vertebral fractures,
3. 250,000 wrist fractures and
4. 300,000 fractures of other sites.

**Risk factor of osteoporosis**

Non modifiable

1.Age & sex

* postmenopausal,female
* Advanced age(more in female after 50 and after 70 in male)

2.Genetics

* Caucasian orAsian.
* family history
* small stature

Modifiable

1. Physical inactivity

* sedentary life style
* lack of weight bearing exercise
* low weight and body mass index

1. Nutrition

* low calcium intake
* vit D deficiency
* high phosphate intake
* inadequate calories
* malnutrition

1. Life style choice

-Caffine

- alcohol

-Tobacco, smoking(tobacco & smoking increase cortisol in blood leading to increase bone loss)

1. Medications:

* Corticosteroids
* anti seizure medication
* heparin
* thyroid hormones.(interfere with the bone rebuilding)

1. Co-morbidity(presence of one or more disorder)

* anorexia nervosa
* Hyperthyroidism
* Cushing’s disease(excess endogenous glucocorticoid)
* Malabsorption
* Renal failure

MNEMONIC to recall risk factors.

A; alcohol use

C; corticosteroid use

C; calcium low

E; estrogen low

S; smoking

S; sedentary lifestyle

(**ACCESS LEADS TO OSTOPOROSIS)**In 2002 it

**Pathophysiology**

Aging, hypogonadism, menopause, high bone turnover etc

Increase bone loss.

Deterioration of bone matrix and diminished bone architectural strength.

Bone becomes progressively porous, brittle and fragile.

Fractures.

**Signs and symptoms**

Early symptoms

* Usually no early symptoms
* Joint aches
* Muscle aches

Advanced osteoporotic symptoms

* Thin/weak bones
* Brittle bones
* Pathological Fractures
* Back ache
* Dowager’s hump(kypnosis)
* Loss of height

**Diagnosis for osteoporosis**

* History taking.
* Complete physical examination.
* Normal x-ray of affected bone.
* Dual energy x-ray absorptiometry (DEXA or DXA) scan:-means of measuring bone mineral density by x-ray beams.

Bone mineral density:-Normal score; -1 to 1 S.D

-Low bone mass; -1 to -2.5 S.D

-Osteoporosis; -2.5 or lower.

**Management**

1.Medication

* Analgesics;e.g. ibuprofen acetaminophens, narcotics.
* Bisphosphonates; e.g. alendronate,ibandronate.
* Calcium
* Calcitonin
* Vitamin D
* Raloxifen(SERMs)
* Hormone replacement; estrogen in combination with progestin.

2. Exercise

* Regular weight bearing exercises, such as walking, jogging, playing tennis, dancing.
* Balance exercise like yoga
* Riding bicycles.

3. Diet

* Proper amount of calcium, vitamins D, and proteins.

4. Lifestyle choices

* Quit smoking
* Limit alcohol

5. Prevent fracture

* Avoid sedating medication.
* Make sure patient vision is good.
* Remove household hazards.

6.Monitoring

* Response to treatment can be monitored with a series of bone mineral density measurements taken every 1-2years.
* Women taking estrogen should have routine mommograms,pelvic exams and pap smear.

7.Orthopedic treatment

* Bracing, prophylactic bracing of spine to prevent pathological fracture in a severely osteoporotic spine.

8.Surgical treatment

* Percutaneous vertebroplasty:

-Vertebroplasty is a minimally invasive, image-guided therapy used to relieve pain from a vertebral body fracture. It has been used for osteoporotic or malignant fractures.

-percutaneous vertebroplasty (PVP) usually involves percutaneous injection of cement,polymethylmethacrylate(PMMA),into the vertebral bodies.

* Kyphoplasty:

-Kyphoplasty is a surgical procedure that expands and stabilizes compression fractures of the spine.it is a type of vertebral agumentation surgery.

-During kyphoplasty balloon device is introduced into the spine and inflated to expand the bone.

-The cavity created by the balloon is then filled with a bone cement mixture.

-When this process is completed , an internal cast is formed inside the vertebral body with the goal of reducing pain, stabilizing a damaged area and/or restoring lost height in the vertebral body.

**Nursing management**

Assessment

* History taking which includes question concerning the:

-occurrence of osteoporosis,

-focus on family history,

-previous fractures,

-dietary consumption,

-exercise pattern,

-onset of menopause and

-use of medicines as well as alcohol, smoking and caffeine intake

* Assess for any symptoms the patient is experiencing, such as, backpain,constipation,fractures,altered body images.
* Physical examination may disclose kyphosis, fractures, or shortened stature.
* Assess for problems in mobility and breathing as a result of changes in postures and weakened muscles.
* Assess for severity of osteoporosis via diagnostic procedures.

Nursing diagnosis

* Based on assessment data, the major nursing diagnosis for the patient who experiences a spontaneous vertebral fractures related to osteoporosis may include:

-acute pain related to fracture and muscle spasm.

-deficient knowledge about the osteoporotic process and treatment regimen.

-risk for injury; additional fractures related to osteoporosis.

-risk for constipation related to immobility and development of ileus.

Planning and goals

The major goals for the patient may include relief of pain, knowledge about osteoporosis and the treatment regimen, improved bowel elimination and absence of additional fractures.

Nursing intervention

* **Promote understanding of osteoporosis and the treatment regimen;**

-provide teaching focusing on factors influencing the development of osteoporosis, intervention to slow the process and measures to relief symptoms.

-Emphasize on continuing to need of sufficient calcium, vit D and weight bearing exercise to slow progress of osteoporosis.

-Provide information related to medicational therapy as prescribed.

* **Preventing injury;**

-physical activity is essential to strengthen muscles, improve balance, prevent disuse atrophy, and retard progressive bone mineralization.

-isometric exercise can strengthen trunk muscles.

-Encourage for walking ,good body mechaniques and good postures.

-avoid sudden bending, jarring and strenuous lifting.

* **Improving bowel elimination;**

-constipation is a problem related to immobility and medications.

-encourage for high fiber diet, increase fluid and tolerable ambulation or exercise.

-if vertebrae collapse involves the T10-T12 vertebrae, patient may develop a paralytic ileus thus monitor patient’s intake ,bowel sound and bowel activity.

-use prescribed stool softeners help, prevent or minimize constipation.

Evaluation

* **Achieves pain relief**

-experiences pain relief at rest.

-experiences minimal discomfort during ADLs.

-demonstrate diminished tenderness of fracture site.

* **Acquire knowledge about osteoporosis and the treatment regimen**

-states relationship of calcium and vit D intake and exercise to bone mass.

-increase level of exercise.

-consume adequate dietary and prescribed medication.

* **Experiences no new fractures;**

-maintain good posture.

-uses good body mechanics.

-consume diet high in calcium and vit D.

-engage in weight bearing exercises(like walking).

-participate in outdoor activity.

-accept assistance and supervision as need.

* **Demonstrate normal bowel elimination;**

-has active bowel sound.

-reports regular pattern of bowel movement.

**summary**

osteoporosis is an age related metabolic disease literally means porous bone in

which the bone mineral density is reduce.It occur when bone lose on excessive

amount of their protein and mineral content,particularly calcium.modifiable risk factor are physical inactivity,nutrition,life style choice,medication,co-morbidity.

Sign and symptoms are joint aches,muscles ache,thin weak bone,pathological fracture etc.

Diagnosis by history taking,physical examination,normal X-ray of affected bone,dual

Energy X-ray absorptiometry.management of osteoporosis is medical management,surgical

Management,life style changes and nursing management.

**References**

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**Assignment**

1. Define osteoporosis.list the sign and symptoms of osteoporosis.