

Modern and Traditional Perspectives of Osteoporosis: An Ethno-Orthopedic Study

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Abstract

For centuries before the inception of modern medicine, traditional folk, the world over, had developed culture specific beliefs and practices regarding health and disease. This paper unveils the socio-cultural beliefs and practices regarding Osteoporosis among the Gond and the Thakur tribal folk inhabiting the state of Maharashtra in India. Through in-depth interviews of the patients, their families, the religious leaders and the village elders belonging to the Gadchiroli and Raigad districts of Maharashtra, valuable qualitative information was gathered and analyzed. To be more precise, qualitative data was gathered through in-depth interviews of 50 Thakurs, 50 Gonds, 5 bone setters, 5 herbalists and 5 midwives. It is interesting to note that the traditional views of the tribal folk regarding Osteoporosis and its etiology, the growth and development of the human bones, are very different and rather weird from those of the allopathic interpretations in modern medicine. There is an urgent need to carry out more ethno-orthopedic studies on the tribal folk throughout India and to recommend practical strategies to create awareness among them about the cause and care of Osteoporosis which primarily affects the senior female population over the age of 50 but to a lesser degree the senior male population over the age of 50 as well.

Keywords: Osteoporosis, ethno-orthopedic, tribal folk (Thakurs and Gonds), risk factors

Introduction

Orthopedic surgeons today are concerned with diseases and injuries to the bones, joints, trunk and limbs. Their field includes the study of the nerves and blood vessels too. Adams and Hamblem (2001). In fact, the medical field of orthopedics is so vast, that an orthopedic surgeon takes years and decades of practice before he is considered a specialist by others in his field. There are several diseases of the limbs, trunk, joints, bones, and the skeletal system in general. It is difficult for a layman to understand these disorders and the scientific etiology associated with them. However, the concept of disease and its etiology varies from one society to another and hence the need for an ethno-orthopedic study which is the people's view about the human skeletal system.

From time immemorial diseases, ailments, conditions, pain and suffering have been problems of every society and as such, every known society in the world have developed methods of coping with this universal problem by creating their own systems of medicine Caudil (1955). Newell (1975) has rightly stated that, throughout the ages, man has been devising ways and means of caring for the sick in their community.

As aptly pointed out by Tribhuwan and Gambhir (1995), every culture, has its own beliefs and practices regarding health and disease. It is to such beliefs and practices regarding health and disease, which are products of indigenous cultural development and not explicitly derived from the conceptual frame work of modern medicine, that the term "Ethno-medicine" is applied according to Hughes (1968).

Thus, even before the advent of modern medicine, traditional folk, the world over, had developed culture specific beliefs and practices regarding health and disease. This paper unveils the socio-cultural beliefs and practices regarding Osteoporosis among the Gonds and Thakur Tribals of Maharashtra State in India. It is based on empirical enquiry into the ethno-medical and ethno-orthopedic systems of these two tribes. Its prime concern is to show, what tribals perceive, believe and practice about an orthopedic disorder such as Osteoporosis.

Objectives of the Paper

1. To present the scientific and medical interpretation of Osteoporosis.
2. To understand the tribal perceptions of growth and development of the human bones.
3. To unveil the beliefs and practices associated with osteoporosis among the Gonds and Thakurs.
4. To recommend strategies to create awareness among tribals about osteoporosis.

Research Methodology

The present field work was carried out among two major tribes of Maharashtra in India namely the Gonds of Gadchiroli and the Thakurs of Raigad districts respectively. The Gond informants were drawn from two villages of the Armori block of Gadchiroli district namely: Thane gaon and Wadaha gaon. The Thakur respondents were selected from Nagewadi and Khondyachi wadi, two hamlets of the Pathraj village in the Karjat block of Raigad district.

Research Tools and Data Collection

Data was collected and recorded using anthropological tools and techniques. In-depth interviews of key informants from both the tribes, such as patients, family and village elders and the ethno-medical specialists were carefully registered. Participant observation was carried out by participating in rituals of diagnosis, healing and thanksgiving. Thus, qualitative data was gathered by interviewing 50 Thakurs and 50 Gonds. Besides this, in-depth interviews of 5 bone setters, 5 herbalists and 5 midwives were conducted and information gathered from the Gonds as well as the Thakurs respectively. The data was analyzed manually as it was qualitative in nature.

Osteoporosis: The Modern Perspective

According to the Mayo Clinic, Osteoporosis causes bones to become weak and brittle — so brittle that a fall or even mild stresses like bending over or coughing can cause a fracture. Osteoporosis-related fractures most commonly occur in the hip, wrist or spine. Bone is a living tissue, which is constantly being absorbed and replaced. Osteoporosis occurs when the creation of new bone doesn't keep up with the removal of old bone. Osteoporosis affects men and women of all races. But white and Asian women — especially those who are past menopause — are at highest risk. Medications, healthy diet and weight-bearing exercise can help prevent bone loss or strengthen already weak bones. Osteoporosis is a common disease of the bone characterized by decreased bone mass and bone strength. Loss of bone mass makes the bone porous, fragile and hence more vulnerable to fractures especially at the spine, hip and wrist. In many affected people, bone loss is gradual and without any indications, or warning signs until the disease has advanced. Osteoporosis is also known as "the silent killer" because a person usually doesn't know they have the problem until it's too late.

Based on the findings of Surya (1993), Osteoporosis is by far the commonest metabolic bone disease. It is characterized by a diffuse reduction in the bone density due to decrease in the bone mass.

Adams and Hamblen (2001), Maheshwari (1993) and Surya (1993) have outlined the causes of Osteoporosis which are given below:

- Low bone mass density (also known as bone mineral density). For example, men have higher bone density than women. Therefore, women have a higher risk of Osteoporosis than men.
- Several etiological factors may be operative in a given patient. The common triggering factors are: senility in males and post-menopausal age of 45-50 in females.
- Protein deficiency
- Post immobilization as in bed-ridden patients.
- Life style factors like the type of work undertaken.
- Genetic or hereditary factors
- Long term use of medications containing steroids.
- Poor absorption of minerals in the body.

Table 1: Showing the Country Wise Estimated Prevalence of Osteoporosis Versus Population in 2014.

Statistics of Osteoporosis in Asia		
Country or Region	Estimated Prevalence	Population in 2014
Bangladesh	14,549,755	157,446,000
Bhutan	224,985	754,780
China	133,704,906	1,366,980,000
East Timor	104,923	1,212,107
Hong Kong	705,674	7,234,800
India	109,639,624	1,263,590,000
Indonesia	24,546,628	252,164,800
Japan	13,107,809	127,080,000
Laos	624,659	6,693,300
Macau	45,838	631,000
Malaysia	2,421,432	30,423,500
Mongolia	283,223	2,986,557
North Korea	2,336,512	25,027,000
Pakistan	16,387,858	188,346,000
Papua New Guinea	557,970	7,398,500
Philippines	8,877,821	100,662,800
Singapore	448,194	5,469,700
South Korea	4,965,240	50,423,955
Sri Lanka	2,049,061	20,277,597
Taiwan	2,341,895	23,417,116
Thailand	6,677,333	64,871,000
Vietnam	8,509,406	89,708,900

There are many ailments or conditions in Western industrialized societies that were unheard of, or at least very rare, just a century ago. The same situation prevails among non-literate peoples who do not have the “benefits” of the advancement of science and the knowledge we have today. Many scholars tell us that there is a very good reason for this: They eat what nature intended, we don’t. Hippocrates (ca. 460 BC – Ca. 370 BC), the father of modern medicine said, “Let food be thy medicine and medicine be thy food.”

Dr. Love (1997) says, Central American Indian women, for example, live for an average of thirty years after menopause but they don’t get Osteoporosis, they don’t lose height, they don’t develop a dowager’s hump which is a curved spine or stooped posture and they don’t get fractures. A research team analyzed their hormone levels and bone density and found that their estrogen levels were no higher than those of white American women – in some cases they were even lower. Bone density tests by a research team showed that bone loss occurred in these women at the same rate as their US counterparts. So why didn’t they suffer fractures? Is it possible that there are multiple causes involved?

Drs. Dawson-Hughes and Harris (2002), of the Calcium and Bone Metabolism Laboratory, Tufts University, Boston, Massachusetts, USA, tested associations between protein intake and change in bone mass density in 342 healthy men and women aged 65 or over who had completed a 3-year, randomized, placebo-controlled trial of calcium and vitamin D supplements. They found that higher protein intake was significantly associated with a favorable 3-years change in total-body bone mass density in the group that took the supplements but this was not the case in the placebo group.

In Papua New Guinea along with plant medicines and traditional therapies for treating physical symptoms, patients and caregivers used rituals that were designed to overcome or ascertain the causes of sickness including mental illnesses, ruptured social relationships, the work of sorcerers, and attacks by ghosts. It is interesting to note that in many areas, women and girls were given significantly less food than men and boys, resulting in a natural weight loss, anemia, Osteoporosis, and greater susceptibility to other illnesses.

Signs and Symptoms

Orthopedic experts have revealed that Osteoporosis conditions can operate silently for decades because the disease doesn't show any symptoms until a bone fracture occurs. In the early stages of bone loss, one usually has no pain or symptoms. But, once weakened by Osteoporosis, some of the signs and symptoms are as follows:

- Back pain
- Reduction in height
- Stooped posture
- Fracture of the vertebrae, wrist, hip and possibly other bones as well.
- Pain in the neck region
- Pain in the thoracic or chest cavity
- Loss of teeth

Significant Facts about Osteoporosis

- Eighty percent of those affected by Osteoporosis are women.
- One out of three women and one out of eight men over the age of fifty will have an Osteoporosis related fracture in their life time.
- Significant risk has been reported in people of all ethnic backgrounds.
- Unfortunately, Osteoporosis strikes individuals in old age.

Risk Factors

Orthopedic experts have revealed a number of factors that can increase the chances of one being affected by Osteoporosis. These factors are listed below:

1. **Family history:** Osteoporosis runs in families. For that reason, having a parent with the disease, puts you at greater risk, especially if you also have a family history of fractures.
2. **Frame size:** men and women who have small body frames tend to have higher risk because they have less bone mass to draw from as they age.
3. **Tobacco use:** According to research scholars, the use of tobacco contributes to weak bones.
4. **Estrogen deficiency:** Deficiency of estrogen, the female sex hormone, as observed in many female patients after menopause and surgical removal of the ovaries.
5. **Eating disorders:** Anorexia nervosa, an eating disorder, marked by an extreme fear of becoming overweight, that leads to excessive dieting to the point of serious ill-health and sometimes death; and Bulimia, a condition in which bouts of overeating are followed by under eating, use of laxatives, or self-induced vomiting. It is associated with depression and anxiety about putting on weight. Both these disorders can cause Osteoporosis.
6. **Medication:** Long term use of certain medication like corticosteroids, diuretics and blood-thinning medications can cause bone loss.
7. **Breast cancer:** Post menopausal women who have had breast cancer are at risk of Osteoporosis, especially if they were treated with chemotherapy.
8. **Low Calcium intake:** A lifelong lack of calcium plays a major role in the development of Osteoporosis. Low calcium intake, especially before 30 years of age, contributes to poor bone density, early loss of bone tissue and an increased risk of fractures.

Given the above modern or allopathic perspective of osteoporosis, in contrast the tribal perception of osteoporosis, its signs, symptoms, causes, preventive and curative precautions as viewed by them from an insider's or emic perspective is indeed worth studying.

Osteoporosis: Tribal Perception

In depth interviews with patients, elderly people, bone setters, midwives and herbalists reveal that both the Gonds and the Thakurs have no clear cut name for the disease, Osteoporosis. The Thakurs refer to the disease to a condition of deteriorating or degeneration of bones. The traditional name for the condition is "hadya ziyane". The Gonds on the other give no particular name for the ailment but refer to the condition as the weakening of the bones after the age of 45.

Some of the signs and symptoms of the disease as perceived by the Gonds and Thakurs are as follows:

1. Blood of such people become reddish black. It does not have strength (takat).
2. Bones become soft like cotton or wet coconut fiber.
3. People with this condition have less flesh.
4. They complain of joint, muscle, bone and back aches.
5. They eat less.
6. Women who have heavy work load become victims of the disease.
7. They do not work nor walk around in the village.

Etiology of Osteoporosis

Some of the etiological or causal explanations for Osteoporosis by the Thakurs and Gond patients studied, are as follows:

- Wrath of gods and goddesses.
- Witch craft and sorcery.
- Bad luck.
- Breach of cultural taboo.
- Poor growth and development of bones.

Therapy

What comes spiritually must be healed spiritually and hence the role of shamans, bone setters, herbalists and midwives become crucial. Studies by Harner (1973), Schutlur (1976), Lieban (1973), Foster and Anderson (1983), Kurian and Tribhuwan (1990), Tribhuwan and Gambhir (1995), Jain and Tribhuwan (1996) Tribhuwan (1998), have revealed that tribal medical specialist called Bhagats (male) or Bhagteens (female) are looked upon with respect by their community members for their knowledge, medical skills, and for the health services they render.

Depending on the cause perceived the tribal medical practitioners provide a therapy. He or she may combine herbal, mechanical and magico-religious therapies.

Some of the major therapies are listed below:

1. Appeasing the pathogenic agents by offering a chicken as a sacrifice or a Coconut (*Cocos nucifera*), or "Mauha" liquor (*Bassia latifolia*) and at times sacrificing a goat.
2. Recommending massage of "Mauha" seed oil, Mustard or "Sarso" oil (*Brassica juncea*) or "Ghorpad" which is a monitor lizard (*Varanus sp.*) oil.
3. Recommending the patients to consume a mixture of chicken and wild boar soup and in addition, the chewing on the soft bones. Eating of other non-vegetarian meat is yet another recommendation.
4. Recommending the consumption of "Ghorpad," the monitor lizard (*Varanus sp.*) meat along with a body massage with the oil prepared from the fat of the monitor lizard.
5. Consumption of vegetables such as Spinach or "Palak" (*Spinacia oleracea*), "Chavli Bhajee" (*Amaranthus spinosus*), Tomatoes (*Lycopersicon esculentum*), Bottle-gourd or "Dudhi Bhopala" (*Lagenaria siceraria*), Drum stick (*Moringa oleifera*), Fenugreek or Methi (*Trigonella foenum-graecum*) which gives strength to the bones.
6. Consumptions of meat of green pigeons to strengthen the bones.
7. Consumption of Papaya (*Carica papaya*) is believed to reduce bone, joint, body pain and backaches.

8. The Gond tribal bone setters recommend the consumption of the soup made from the boiled hooves and head of goats. They believe that by doing so the bones become strong.
9. The elders of both the tribes stated that the powder of Babul seeds (*Acacia nilotica*) should be taken with milk or water and the decoction would make the muscles and bones strong and flexible.
10. The Thakur bone setters, herbalists, Shamans and midwives recommended the consumption of Nachni porridge (*Eleucine coracana*). They believe it makes the muscles and bones strong and also purifies the blood.

Interestingly among the tribal Thakurs as well as the tribal Gonds milk and milk products are not consumed. In fact they do not milk their cows. They believe that by milking the cows, the young calves are deprived of the milk. Both tribes consume tea without milk. Scientifically speaking, milk is rich in calcium and proteins and this could have saved many of the tribal folk from Osteoporosis. It was also observed that the first milk of the weaning mother containing colostrum, that which builds immunity in babies, was not given to the new born babies in both the tribal communities. They believe it is spoilt (Naska) milk. Instead, the new born baby was given honey or brown sugar water for two days after delivery.

The Gonds as well as the Thakurs believe that for nine months and nine days during pregnancy a woman does not menstruate. This "spoilt menstrual blood" which does not come out of the body, mixes with her normal blood. Breast milk is produced from a woman's blood. Blood gets converted into milk. Now, the menstrual as well as the normal blood gets converted into thick milk, which is the colostrums, "the spoilt milk" (Naska dudh) and hence it is not given to the new born. They believe that it causes diarrhea, and hence it is squeezed out onto a cloth and buried. Tomar, Y.P.S. and Tribhuwan, R. (2007) have reported similar practice among the Mavchi tribals of Nadurbar district in Maharashtra. It is evident from the above facts that tribals have their own perceptions of human physiology and anatomy, which differ to a great extent from that of modern medical science.

Concept of the Growth and Development of Bones

Informal interviews with the Thakur and Gond respondents revealed that:

- Rice and Nachani porridge make bones strong.
- Chicken, goat's meat, green pigeon's meat, flesh and fat of monitor Lizard, hooves of goats and meat soup contribute in making human bones strong.
- Both the tribes recommend chewing and eating tender goat bones.
- Bones of teenagers and young people between the ages of 20-40 are very strong.
- Bones of old people are weak, their blood is reddish black.
- Degeneration of bones is associated with aging.

Conclusion

It is evident from the facts reported in this paper, that the beliefs and practices of the Gonds and Thakurs regarding Osteoporosis are very different from those of modern medicine or allopathy. Gonds and Thakurs are just two of the tribes that were studied by the authors. Maharashtra has 45 tribes and in India there are over 750 tribes. It is necessary to document their belief systems not only regarding Osteoporosis but other orthopedic disorders as well so we will know how to approach them and bring about change in their health and well-being.

Recommendations

Given below are few suggestions regarding health education and awareness programmes about Osteoporosis and other orthopedic disorders.

1. Educate the medical and paramedical staff of the Primary Health Centers, Sub-centers and rural Hospitals about this ailment.
2. Educate traditional medical practitioners among the tribals including shamans, bone setters, midwives and herbalists.
3. Conduct camps to identify patients suffering with Osteoporosis in the tribal hamlets.

4. Create awareness in schools and tribal hamlets.
5. Publish booklets and pamphlets with illustrations and diagram to educate them.

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