Research Article

EPIDEMIOLOGY OF VARIOUS ORTHOPEDIC DISEASES IN A TERTIARY CARE TEACHING HOSPITAL

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ABSTRACT

Epidemiology is a science of medicine which measures the occurrence and prevention of morbidity and mortality. It has made many developments in research, public health, basic research. We tried to identify the incidence and relation of disease to the risk factors which will help to prevent the disease occurrence and to easily diagnose the disease. The aim was to determine the prevalence of various orthopedic diseases in a tertiary care teaching hospital and to determine the risk factors included. Out of 900 patients 191 were complained of low back pain, 149 with osteo arthritis, knee joint pains 108, 57with spondylosis, 53 with fractures, 47 with arthritis of different joints, 27 with accidental falls, and 15 with rheumatoid arthritis. One to two cases were reported with groin pain, injury, trigger finger, and only a single case with spondyl arthritis. The observed cases were divided according to the gender. It has shown 84 males and 107 females with LBA, 67 males and 41 females with joint pains, 25 males and 28 females with fractures, 22 males and 35 females with spondylosis, 15 and 26 in sciatica, 4 and 11 in rheumatoid arthritis. The occurrence was almost comparative in arthritis. (osteoarthritis: 80 males and 79 females, arthritis of various joints: 23 in males and 24 in females). The incidence of these diseases may vary according to the risk factors associated, genetical predisposition, region etc. in these areas epidemiological studies need to be done further for précised data that may help the physician.

Keywords: Osteoarthritis, Sciatica, Rheumatoid arthritis, Low back ache, Fractures

INTRODUCTION

Epidemiology is a branch of medicine which deals with the measurement of the occurrence and prevention of morbidity and mortality. It is an aid to promote public health and protects the dose of practical common sense[1]. It has made many developments in clinical research, public health and in basic research of biological sciences[2]. Epidemiology is generally classified into 2 types: descriptive and analytical. Descriptive generally includes what, why and when of a disease and analytical generally includes how about a disease state[3].

Epidemiology has 4 approaches: cluster, ecologic, case-control, and cohort studies.
Cluster is an aggregation of a relatively unexpected high number of cases.

A disease cluster is generally defined as the high incidence of a disease in a geography at that particular time[4].

The study of risk modifying factors on health and its outcomes in a population for a temporary time is called as a ecological study. The risk factors and the outcomes were calculated and divided with the population in each area and was compared using statistical methods[6].

In a nested case control study the cases and controls were selected from individuals and followed for a period of time and measured for the occurrence of a disease[5].

A case series generally includes a group of patients with similar diagnosis[7]. A cohort is a panel study, where the samples are the individuals with a similar charecteristics[8].

Orthopedic diseases are some injuries or diseases that cause restricted movements. Some of them include knee problem, shoulder dislocations, broken cartilages, ankle pain and some myalgias. Now a days, mostly observed health problem is low back pain, that is may be due to strenuous activities, improper use and may be of degradation. It generally involves muscles, nerves, and bones of back[9]. nearly 80% people in developed countries suffer with it and has a prevalence of 9-12% at any age group.

Osteoarthritis is the other most commonly seen disease which involves the joint cartilages. the symptoms generally include the joint pains with stiffness. The major risk factor is overweight, and

other factors includes legs with altered lengths and jobs with high joint stresses and may be inherited[10]. 50% of individuals with age greater than 55 are affected with OA in developed countries and the prevalence may be of 26% by 2040 among them[11]

Spondylosis can be defined as the degeneration of spinal cord because of any reason. It is a form of spondylopathy. In many cases spondylitis involves one or more vertebral joints as well, which itself is called spondylarthritis. It includes 2% of admissions in developed countries[12].

Sciatica is a disease of pain of leg radiated from lower back. most of the cases includes the herniation of the lumbar or sacral nerves[13]. It is most common in females and 2-40% of persons may have sciatica at any point of time[14].
Fracture is a loss of continuity of bone that is may be due to trauma, osteoporosis or because of stress[15]. It has an incidence about 3.6% in England[16].

Many studies reported the day to day increase in the occurrence of orthopedic diseases, Increased disease occurrence rate influences the individual's daily activities and may have decreased effect on their quality of life.
Prevalence id generally defined as the number of people with the disease per total number of people studied at point time[17].

Prevalence = number of persons with disease/ total number of persons.

Minimal data is available over the epidemiology of orthopedic diseases in general population especially in this region. We considered only diseases like arthritis, lower back pain, spondylitis, sciatica, degenerative joint disease as they were observed to be diagnosed majorly in our op department. We tried to identify the incidence and relation of disease to the risk factors which will help to prevent the disease occurrence and to easily diagnose the disease.

AIM

To determine the prevalence of various orthopedic diseases in a tertiary care teaching hospital and to determine the risk factors included.

OBJECTIVES

To determine the prevalence of various orthopedic diseases.
To identify the most targeted population.
To determine occurrence of diseases among gender.

METHODOLOGY

Study design: Ambispective observational study
Study duration: 6 months
Study site: orthopedic op, dept. of orthopedics, Rajiv Gandhi institute of medical sciences, Kadapa, A.P.
Sample size: 900.

Inclusion criteria

All the patients consulting orthopedic OP Dept. with various diseases and willing to participate in the study.

Exclusion criteria

Patients who are not willing were excluded.
Patients with age group ≤ 18 years were excluded.
patients with trauma were excluded.

Ethical clearance

The study was approved by the institutional review board with registered number PRRMCP/IRB/2017/008.

RESULTS

To conduct the study 900 patients were recruited after making them clear about the study and after having a written informed consent from them. Equal number of patients were taken in both groups. (males: 450 and females: 450).out of 900 cases the most observed
cases were as follows.

Out of 900 patients 191 were complained of low back pain, 149 with osteo arthritis, knee joint pains 108, 57with spondylosis, 53 with fractures, 47 with arthritis of different joints, 27 with accidental falls, and 15 with rheumatoid arthritis. One to two cases were reported with groin pain, injury, trigger finger, and only a single case with spondyl arthritis.

Table 1: Occurrence of various orthopedic diseases.

Disease	Number of patients
Low back pain	191
Osteo arthritis	149
KJP	108
Fractures	51
Spondylosis	57
Arthritis	47
Sciatica	41
Accidental fall	27
Ankle sprain	19
Rheumatoid arthritis	15
Trigger finger	3
Bursitis	2
S.A	1

The observed cases were divided according to the gender. It has shown 84 males and 107 females with LBA, 67 males and 41 females with joint pains, 25 males and 28 females with fractures, 22 males and 35 females with spondylosis, 15 and 26 in sciatica, 4 and 11 in rheumatoid arthritis. The occurrence was almost comparative in arthritis. (osteoarthritis: 80 males and 79 females, arthritis of various joints: 23 in males and 24 in females.

Table 2: Categorization of diseases according to gender

Disease	Males	Females
LBA	84	107
OA	80	79
Knee joint pains	67	41
Spondylosis	22	35
Arthritis	23	24
Fractures	25	28
Sciatica	15	26
RA	4	11
S. A	0	1

Table 3: Explanation of the occurrence of various diseases according to the age (years)

Disease	Gender	<10yrs	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
Lba	Male	0	3	12	23	18	15	10	3	0
	Female	0	9	24	25	29	15	7	0	0
OA	Male	0	0	6	1	23	23	21	6	0
	Female	0	0	7	19	26	17	7	3	0
KJP	Male	0	7	9	7	17	10	13	2	2
	Female	0	2	6	6	8	16	3	0	0
Fractures	Male	1	4	4	4	6	2	4	0	0
	Female	5	7	5	3	5	1	2	0	0
Spondylosis	Male	0	0	1	2	8	5	5	1	0
	Female	0	2	8	10	6	8	1	0	0
Arthritis	Male	0	0	1	5	2	8	8	0	0
	Female	0	1	3	2	5	8	6	0	0
Sciatica	Male	0	0	0	2	4	2	4	3	0
	Female	0	0	2	4	6	5	5	4	0
RA	Male	0	1	1	0	0	1	1	0	0
	Female	0	0	3	3	4	1	0	0	0
Spondyl arthritis	Male	0	0	0	0	0	0	0	0	0
	Female	0	0	0	0	1	0	0	0	0

And finally, the prevalence of various diseases was calculated by the above formula and the results were shown in the table.

Table 4: Prevalence of various diseases

Disease	Prevalence (%)
Low back pain	21.2
Osteo arthritis	16.5
Knee joint pains	12
Spondylosis	6.3
Fractures	5.6
Arthritis	5.2
Sciatica	4.5
Accidental fall	3
Rheumatoid arthritis	1.7
Spondyl arthritis	0.1

DISCUSSION

During the study period 900 patients consulted orthopedic op Dept. with different complaints and was diagnosed with various diseases like LBA, OA, knee joint pains, fractures, spondylosis, spondyl arthritis, sciatica, RA, peri and reactive arthritis etc.
We observed no significant difference in op consultation for male and female. A subgroup analysis was done to measure the occurrence of various diseases in both genders. The male patients were diagnosed majorly with LBA, OA and joint pains. Similarly, majority of the females were diagnosed with LBA, OA, and spondylosis with sciatica.

Our finding is compatible with the current knowledge that the risk of developing various orthopedic diseases as most of the male patients were labors, farmers and people doing strenuous activities and most of the females were tailors, computer technicians, etc.

Out of 900 cases observed, 191 are diagnosed with low back pain and has a highest prevalence than any other diseases. Hoy D, Bain C, Williams G, et al. Study has also revealed the same[18]. Cross, M; smith et. al., has revealed the presence of osteo arthritis at a rate of 4.45 globally[19], but the study has revealed the presence up to 16%. This is because of the life style and strenuous activities in the southern region of India. It is the second most among various orthopedic diseases.

Spondylosis is most common in females than in males and with a total prevalence of 6.3%. has also said the occurrence is more common in females than in males[20].

Next to spondylosis most of the cases seen were fractures. Donaldson LJ et. al., has revealed the prevalence of 3.6%. But the occurrence seen was 5.6. This is because of the lack of road rules and most of the fractures are because of driving after alcohol consumption[21].

Sciatica is seen in few cases with an occurrence of 4.5% and was preceded by females. Ropper, Ah et.al. has said the prevalence was 2-40%. And the study says the occurrence is more in males than in females[22]. The occurrence of diseases was most common with the age and has the most occurrence of age of 40-70 in males and 40-60 in females.

Further large-scale studies are needed to establish the correct prevalence of various diseases in the south region.

Our study has some limitations. We had considered only the patients who came to orthopedic OP Dept. at the period of 6 months. Some of the patients cannot come to the OP as they have severe pain, or they may have a consultation at a private physician. So epidemiology of a disease is calculated at hospital level rather than at a community.

CONCLUSION

Through the study we conclude that the prevalence of LBA, OA, joint pains, spondylosis, arthritis and sciatica was more in this region. The incidence of these diseases may vary according to the risk factors associated, genetical predisposition, region etc. in these areas epidemiological studies need to be done further for précised data that may help the physician. This study also emerges the need of physicians for the increased prevalence of these diseases and the establishment of physiotherapy Dept. in various hospital practices.

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REFERENCES

1. Cates WJ. Epidemiology: Applying principles to clinical practice. Contemp Ob/Gyn 1982; 20:147-161.
2. Miquel Porta (2014). A Dictionary of Epidemiology (6th ed.). New York: Oxford University Press. ISBN 978-0-19-997673-7. Retrieved 16 July 2014.
3. "Principles of Epidemiology." Key Concepts in Public Health. London: Sage UK, 2009. Credo Reference. 1 August 2011. Web. 30 September 2012.
4. Case Studies in Environmental Medicine (CSEM), Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services.
5. Essebag, V. Genest, J. Suissa, S. Pilote, L. The nested case-control study in cardiology. American Heart Journal. 2003. 146: (4) 581-590.
6. Kaufmann SH; Schaible UE (2005). "100th anniversary of Robert Koch's Nobel Prize for the discovery of the tubercle bacillus". Trends Microbiol. 13 (10): 469–7
7. Hennekens, Charles H.; Julie E. Buring (1987). Mayrent, Sherry L. (Ed.), ed. Epidemiology in Medicine. Lippincott, Williams and Wilkins. ISBN 978-0-316-35636-7.
8. "What is the difference between a Panel Study and a Cohort Study?". Academia Stack Exchange.
9. "Low Back Pain Fact Sheet". National Institute of Neurological Disorders and Stroke. 3 November 2015.
10. Vinod Malhotra; Yao, Fun-Sun F.; Fontes, Manuel da Costa (2011). *Yao* and Artusio's Anesthesiology: Problem-Oriented Patient Management. Hagerstwon, MD: Lippincott Williams & Wilkins. pp. Chapter 49.
11. Atlas of Osteoarthritis. Springer. 2015. p. 21.
12. Arthritis-Related Statistics: Prevalence of Arthritis in the United States". Centers for Disease Control and Prevention, US Department of Health and Human Services. 9 November 2016
13. Newman & Santiago, 2013.
14. Valat, JP; Genevay, S; Marty, M; Rozenberg, S; Koes, B (April 2010). "Sciatica". Best practice & research. Clinical rheumatology. 24 (2): 241–52.
15. Witmer, Daniel K.; Marshall, Silas T.; Browner, Bruce D. (2016). "Emergency Care of Musculoskeletal Injuries". In Townsend, Courtney M.; Beauchamp, R. Daniel; Evers, B. Mark; Mattox, Kenneth L. Sabiston Textbook of Surgery (20th ed.). Elsevier. p. 462–504
16. Donaldson LJ et.al., The epidemiology of fractures in England, J Epidemiol Community Health. 2008 Feb;62(2):174-80.
17. Kenneth J. Rothman (21 June 2012). Epidemiology: An Introduction. Oxford University Press. p. 53.
18. Hoy D, Bain C, Williams G, et al. (June 2012). "A systematic review of the global prevalence of low back pain". Arthritis Rheum. 64 (6): 2028–37.
19. Cross, M; Smith, E; Hoy, D; Nolte, S; Ackerman, I; Fransen, M; Bridgett, L; Williams, S; Guillemin, F; Hill, C. L.; Laslett, L. L.; Jones, G; Cicuttini, F; Osborne, R; Vos, T; Buchbinder, R; Woolf, A; March, L (2014). "The global burden of hip and knee osteoarthritis: Estimates from the global burden of disease 2010 study". Annals of the Rheumatic Diseases. 73 (7): 1323–3
20. Muraki S[1], Yoshimura N, Akune T, Tanaka S, Takahashi I, Fujiwara S. Prevalence, incidence and progression of lumbar spondylosis by gender and age strata. Mod Rheumatol. 2014;24(4):657-61.
21. Donaldson LJ[1], Reckless IP, Scholes S, Mindell JS, Shelton NJ. The epidemiology of fractures in England. J Epidemiol Community Health. 2008 Feb;62(2):174-80.
22. Ropper, AH; Zafonte, RD (26 March 2015). "Sciatica". The New England Journal of Medicine. 372 (13): 1240–8.

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