



KNEE OSTEOARTHRITIS EPIDEMIOLOGICAL CHARACTERISTICS IN HANDAN REGION OF CHINA

*Zhang yong-tao, Niu jing, Chen xin-zhi and Chu zhao-zhen

*Department of Orthopaedics, Affiliated Hospital of Hebei University of Engineering,
Handan city, Hebei Province

Department of Ultrasound diagnostics, Affiliated Hospital of Hebei University of Engineering,
Handan city, Hebei Province

ARTICLE INFO

Article History:

Received 13th August, 2020

Received in revised form 11th
September, 2020

Accepted 8th October, 2020

Published online 28th November, 2020

Key words:

Knee; Osteoarthritis; Body mass index;
Epidemiology

ABSTRACT

Objective To investigation and analyze of the epidemiological characteristics of osteoarthritis in Handan region of China.

Methods Survey the urban and rural residents over the age of 45 in Handan region of the patients had knee osteoarthritis randomly and to analyze the risk factors.

Results The total prevalence rate of knee osteoarthritis is 9.1%, the prevalence of 9.6% rural residents 9.6% of urban residents; Unreasonable 11.8% 5.9% of men women, gender, age, body mass index(BMI), urban and rural residents is not reasonable way of life and work associated with knee osteoarthritis.

Conclusion The femal in Handan region of China had a higher than the male residents, BMI is associated with morbidity. Reduce the body mass index is expected to reduce the incidence of knee osteoarthritis for the female.

Copyright©2020 Zhang yong-tao et al. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Osteoarthritis (OA) is a degenerative joint disease in middle-aged and old people. The main characteristics of this chronic joint disease are the articular cartilage degeneration, damage, bone hyperplasia, pain and deformity. The susceptible factors of knee OA are various, including genetic, strain, metabolism, lifestyle, nutrition and other aspects. There are regional differences for the incidence of OA^[1-4].

It was related to the regional race, lifestyle, eating, working style, way of walking and obesity. Obesity is a risk factor for osteoarthritis, losing weight can reduce the risk of knee OA in women^[5]. The data of the Chinese center for disease control and prevention showed that the obesity rate is significantly higher than the south in northern China. The chronic disease and its risk factors monitoring data according to a reported that obesity rate in Hebei region is significantly higher than the national average. Handan city is relatively dense and numerous population in Hebei province. To carry out the investigation of the relationship between obesity and joint is very necessary. With the growing elderly population, joint degeneration caused by osteoarthritis patients will also increase. Especially, as part of the human body movement of the knee OA will be more and more obviously, it affects the quality of life for the elderly and the impact on the family and society cannot be ignored. Handan city is a relatively dense and numerous population in

Hebei region, there is lack of epidemiological studies in knee OA. To investigate and explore the risk factors and the relationship between various factors and the related policy, health guidance, prevention and treatment decisions reference meaning is self-evident. Therefore, this research was carried out to investigate the epidemiological characteristics of knee OA in Handan region, and to explore the correlation between body weight and knee arthritis.

Knee osteoarthritis questionnaires designed by the orthopaedic follow health physical examination and imaging professionals, jointly participate in surveys and field questionnaire records, record (1) demographic information: name, sex, age, weight, height, etc;(2) the sociological materials: economy, eating habits, living environment condition, profession, profession position (squat), professional strength; Local symptoms and signs of knee joint (3) : unilateral or bilateral, pain time, varus or valgus deformity;(4) make a diagnosis and give treatment: X-ray films of a load-bearing status, orthopedic surgeons, and image practitioner for its diagnosis, analgesic drugs or not, articular cavity injection drug or not, joint replacement surgery or not.(5) the subjects divided into clinical symptoms and no clinical symptoms group. With clinical symptoms and the internal and external double deformities, to be a medical car load X-ray films of knee joint is oblique, and diagnosis.

*Corresponding author: Zhang yong-tao

Diagnostic criteria based on Kellgem classification: 0 level is normal, no osteophyte; Mild osteophyte, level I and level II, osteophyte, level III, but not involving the joint clearance joint clearance moderate stenosis, level IV joint space narrow obviously, subchondral sclerosis. For there are clinical symptoms and radiology X-ray showed Kellgem classification for class II or higher, diagnosis and exclusion of secondary osteoarthritis.

Specialist is responsible for the investigation information input computer, with SPSS 26.0 statistical processing.

1. Use rate than chi-square analysis of age, sex, Body mass index, Body mass index, BMI), professional position, living environment, living habits and so on in the normal group, or the difference of OA group, carries on the statistical description.

2. OA related factors by using Logistic regression analysis, $P < 0.05$ for statistical significance.

RESULT

The survey sample of 1086 people, 1012 valid questionnaires, Rural city of 427 people, 585 people; Male 489, female 533 people; Age 42-82; Osteoarthritis, 92, 41 people, city 51 people in rural areas; 29 men, women and 63. Knee osteoarthritis prevalence 2.1 9.1%, the unilateral knee joint OA incidence 7.9%, bilateral knee joint OA incidence of 1.2%; 9.6% 9.6% prevalence of urban and rural areas, urban and rural; Incidence of knee OA gender: male 5.9%, female 11.8% (Table 1).

Table 1 The incidence of knee OA

Side don't prevalence (%)		Gender incidence rate (%)		Urban and rural rates (%)	
One sided	both sides	Men	Women	The city	The rura
7.9%	1.2%	5.9	11.8%	9.6%	8.7%

According to the survey, this study is less than 70 years old crowd of knee OA incidence increased with age, the onset of the main crowd of 50 -70 years (table 2)

Table 2 The age distribution of knee OA

Age group (years old)	n	Number of cases OA	Prevalence rate (%)
40~49	186	5	2.7
50~59	367	25	6.8
60~69	382	43	11.3
70~	77	19	24.7
Total	1012	92	9.1

part of the survey after knee replacement, more than 70 years old subjects because the daily activities, less with other diseases and refused surgery causes higher percentage of surgery. Gender prevalence differences respectively, women is 2.0 times that of the male incidence of knee OA (chi-square = 16.71, the degrees of freedom is 1, $P = 0.000$). No difference between the urban and rural distribution. Long engaged in farming, rural vocational distribution squat building work the crowd incidence is higher than the rest of the population, occupational distribution between urban and rural areas in long standing people than the rest of the population. Knee joint OA incidence increased with the increase of body mass index (BMI) of those surveyed (chi-square = 8.49.71, degrees of freedom is 1, $P = 0.026$). Number of overweight women than men.

The gender, age, body mass index, job position (farming, crouch long) as variable to establish multivariate regression equation, the multi-factor Logistic regression was analyzed (table 3). The higher body mass index, age, long-term farming and long crouching, women are the dangerous factors of knee OA.

Table 3 The region's knee osteoarthritis joint Logistic regression analysis of related factors

	variable	βvalue	OR value (95% CI)	P
The knee OA	Gender	0.934	2.489	0.000
	Age	0.058	1.061	0.000
	Body mass index (BMI)	0.087	1.071	0.014
	Working posture	0.021	1.023	0.026

DISCUSSION

The epidemiological survey results show that the incidence of knee OA is 9.1% in Handan region of China. The female had a higher incidence than the male. The study also found that the region's residents high-risk dangerous factors of knee OA to a higher body mass index (BMI) and the way the farming and crouch long work. With the development of modern agriculture mechanization, rural residents for agricultural factors lead to severe osteoarthritis will be weakened. However, crouch long assignments in the number of construction workers are still more, and the knee joint injury factors still exist. High incidence of female residents may be associated with women unique physiological characteristics. The incidence of female postmenopausal patients with osteoarthritis rise rapidly, remove the age factor, elevatory and postmenopausal estrogen and progesterone levels and an imbalance of the both in the body. Many studies were carried out the related research [7, 8]. In addition, the survey found that the knee OA incidence in women was significantly higher than male. High women than men are in with a BMI may be one of the reasons, but not the only reason [9]. Diet intervention, weight control, convenient living and working way and community health education are imperative to improve the level of regional and the quality of life. Furthermore, this study found that the higher incidence of knee OA in older people, but the relatively small number of patients (Table 2). Reasons may be various, may be associated to the survey sample, some personnel lost to follow-up, decrease of activity in older patients and deaths for other diseases.

In conclusion, Women in Handan region residents of knee osteoarthritis prevalence is higher than male residents, BMI is associated with morbidity. Reduce the body mass index is expected to reduce the incidence of knee osteoarthritis for the female.

Source of funding

This work was supported by Medical scientific research key project in Hebei province in 2017 (20170847).

Conflict of interest

None declared.

References

1. Li Ru-jun, Lin Jian-hao. Osteoarthritis were reviewed The Chinese clinical doctors, 2010, 38 (7): 486-489.
2. Kang X¹, Fransen M, Zhang Y, Li H, Ke Y, Lu M, Su S, Song X, Guo Y, Chen J, Niu J, Felson D, Lin J, The high prevalence of knee osteoarthritis in a rural Chinese population: the Wuchuan osteoarthritis study. *Arthritis Rheum.* 2009 Jul 15;61(7):1008.
3. Wigley RD¹, Zhang NZ, Zeng QY, Shi CS, Hu DW, Couchman K, Duff IF, Bennett PH., Rheumatic diseases in China: ILAR-China study comparing the prevalence of rheumatic symptoms in northern and southern rural populations. *J Rheumatol.* 1994 Aug; 21(8):1484-90.
4. Jordan JM¹, Helmick CG, Renner JB, Luta G, Dragomir AD, Woodard J, Fang F, Schwartz TA, Nelson AE, Abbate LM, Callahan LF, Kalsbeek WD, Hochberg MC. Prevalence of hip symptoms and radiographic and symptomatic hip osteoarthritis in African Americans and Caucasians: the Johnston County Osteoarthritis Project. *J Rheumatol.* 2009 Apr; 36(4):809-15.
5. McAlindon TE¹, Jacques P, Zhang Y, Hannan MT, Aliabadi P, Weissman B, Rush D, Levy D, Felson DT.. Do antioxidant micronutrients protect against the development and progression of knee osteoarthritis? *Arthritis Rheum.* 1996 Apr; 39(4):648-56.
6. Wang wei, Wang kun-zheng, Dang xiao-qian, etc. The elderly population osteoarthritis epidemiological studies. *Chinese journal of gerontology.* 2007, 27:566-568.
7. Parazzini F¹; Progretto Menopausa Italia Study Group., Menopausal status, hormone replacement therapy use and risk of self-reported physician-diagnosed osteoarthritis in women attending menopause clinics in Italy. *Maturitas.* 2003 Nov 20;46(3):207-12.
8. Wluka AE¹, Cicuttini FM, Spector TD. Menopause, oestrogens and arthritis. *Maturitas.* 2000 Jun 30; 35(3):183-99.
9. Stürmer T¹, Günther KP, Brenner H. Obesity, over weight and patterns of osteoarthritis: the Ulm Osteoarthritis Study. *J Clin Epidemiol.* 2000 Mar 1; 53(3):307-13.

How to cite this article:

Zhang yong-tao et al (2020) 'Knee Osteoarthritis Epidemiological Characteristics in Handan Region of China', *International Journal of Current Advanced Research*, 09(11), pp. 23264-23266.
DOI: <http://dx.doi.org/10.24327/ijcar.2020.23266.4607>
