

Awareness About the Risk Factors of Osteoarthritis Among Adult Population of Rawalpindi

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ABSTRACT

Objective: To assess awareness about risk factors of osteoarthritis among different groups of respondents according to their educational status.

Study Design: Cross sectional study.

Place and Duration of Study: Urban areas of Rawalpindi and Islamabad Pakistan, from Mar to Aug 2015.

Methodology: A cross sectional analysis was carried out amid 210 individuals ranging from 15-35 years from urban areas of Rawalpindi/Islamabad having education status above matriculation. A self-made questionnaire was used and SPSS version 22 was used for data analysis.

Results: Study included a total, 76(36.2%) males and 134(63.8%) females. Statistically significant difference of responses were observed when respondents were asked about previous joint injuries ($p<0.001$), repetitive stress on a particular joint ($p<0.001$), family history ($p<0.001$), congenital malformation of joints and cartilages ($p=0.001$), metabolic diseases like diabetes and gout ($p=0.004$) and vitamin D deficiency ($p<0.001$) whereas all groups of respondents according to education status were well aware about risk factors including increasing age ($p=0.761$), female gender ($p=0.106$), obesity ($p=0.722$), cold weather ($p=0.0478$) and calcium deficiency ($p=0.299$).

Conclusion: People of higher level of education status were more aware about the risk factors of osteoarthritis as compared to those at lower levels.

Keywords: Education status, Osteoarthritis, Risk factors.

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INTRODUCTION

Osteoarthritis (OA) is the commonest joint disorders in the world. Its prevalence is increasing due to the aging of the population all over the world and also due to increase in risk factors leading to OA.¹ It is the disruption of cartilage including synovial irritation, remodeling of underlying bone & osteophyte production.²

The etiology relates to joint stress, its variance, and weakening of articulating cartilage.³ The pathological process includes decreased lubrication of joint surface. It is due to inadequate level of lubricin which is an important lubricants of joint.³

Cartilage disruption results from catabolic processes which are initiated by the release of toxic products of inflammation like chemokine and other mediators produced by the cartilage and synovium resulting in release of metalloproteinases.⁴

The factors which enhance the possibility of development of OA include senility, trauma of joint, disordered limb alignment, female gender, obesity, heavy work, congenital malformation and family history.⁵

These factors can also be classified as the facets relating to person in general and others relating to joint. Age, sex, BMI, nutrition and genetic predisposition correlate to a person's lifestyle whereas damage to joint and decrease in muscle strength correspond to the joint and its adjacent structures.⁶ Low socioeconomic status and other diseases of cardiovascular system have been considered as risk factors.⁷

Decreased physical activity aggravate age-related physiological changes such as decrease in muscular strength and reduced balance ability which contributes to an increase in risk of accidents such as fall and an inability to perform daily activities.⁸

In the 20th century, in United States the life expectancy percentage rose resulting in raised levels of knee OA in the older generation due to excessive wear and tear of joints. Therefore, an accepted component of OA development in United States is obesity, as a consequence of joint overloading and adiposity-induced inflammation.⁹ In a survey done in India, the prevalence of OA was greater in lower socioeconomic class.¹⁰

This study was done to assess the awareness about the risk factors of osteoarthritis in adult population of Rawalpindi/Islamabad because

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according to studies, by the age of 40 years, about 90% of people have some level of OA in their weight bearing joints as evident on X-rays but may remain asymptomatic.

METHODOLOGY

The cross sectional study was carried in 2015 from March till the end of August. Ethical considerations were certified by the Ethical Review Committee of Yusra Medical and Dental College. 210 individuals, who were included through consecutive sampling.

Inclusion Criteria: Individuals of either gender, with age range 15-35 years, the residents of Islamabad and Rawalpindi were included.

Exclusion Criteria: None

The rationale of the study was explained to the participants and their consent as well as confidentiality was ascertained. Keeping the confidence interval at 95%, the size of sample was selected by open Epi sample size calculator. 210. SPSS version 22 was used to assess the data gathered with the help of a self-structured close ended questionere validated via Cronbach Alpha value. It was based on: (1) Demographic profile (gender, age, income and educational level) of the participants (2) Knowledge of risk factors. The relation between different levels of education and various risk factors was found by the application of Chi-square test. The assessment of the education level, previous joint injuries, metabolic disorders, congenital malformations, vitamin D deficiency, repetitive stress and family history was based on Pearson correlation. *p*-value was taken as significant if it came out to be ≤ 0.05.

RESULTS

The present study showed that awareness was found to be increasing with increasing level of education status of the respondents regarding “previous injuries of a particular joint (Table-I). Pearson Chi-square was applied and *p*-value was found to be significant (0.000). Pearson Chi-Square test was found to be significant (*p*<0.001) which showed that it was believed that there was a positive relation of “family history” with the increase in risk of developing osteoarthritis which was the correct response (Table-II). Pearson Chi-Square test was found to be insignificant (*p*=0.722) which shows that there was no significant difference of responses among all the groups (Table-III). Pearson Chi-Square test was found to be insignificant (*p*=0.106) which showed that there was no significant awareness regarding this risk factor among all groups (Table-IV).

The bachelors (91%) were more aware regarding Vitamin D deficiency and congenital malformation risk factor (Figure-1).

Table-I: Role of Previous Joint Injuries on Development of Osteoarthritis (n=210)

		Injuries		
		Yes(n%)	No(n%)	I don't know
Educational status of participant	Matriculation	10%	5%	7%
	Intermediate	15%	8%	6%
	Undergraduate/Bachelors	75%	23%	9%
	Masters and above	44%	2%	3%

Table-II: Risk of Development of Osteoarthritis in Individuals having a Positive Family History (n=210)

		Family History		
		Yes (n%)	No (n%)	I don't know (n%)
Educational Status of Participant	Matriculation	11%	6%	5%
	Intermediate	16%	8%	5%
	Undergraduate/Bachelors	89%	3%	2%
	Masters and above	41%	5%	3%

Table-III: Obesity as a Risk Factor of Osteoarthritis (n=210)

		Obesity		
		Yes (n%)	No (n%)	I don't know(n%)
Educational status of Participant	Matriculation	17%	3%	2%
	Intermediate	20%	6%	3%
	Undergraduate/Bachelors	82%	16%	9%
	Masters and above	41%	7%	1%

Table-IV: Gender as a Risk Factor of Osteoarthritis(n=210)

		Gender			
		Males (n%)	Females (n%)	Both Affected equally (n%)	I don't know (n%)
Educational status of participant	Matriculation	2%	12%	6%	2%
	Intermediate	2%	17%	9%	1%
	Undergraduate/Bachelors	3%	83%	19%	2%
	Masters and above	3%	26%	18%	2%

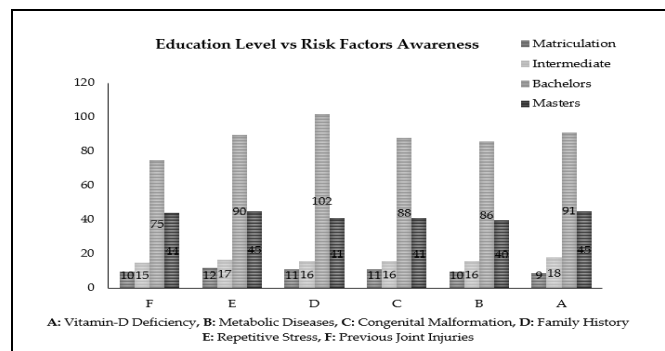


Figure-1: Education level vs risk factor assessment

DISCUSSION

We evaluated 210 participants who were the residents of Islamabad and Rawalpindi by a

questionnaire to determine the perception of risk factors of Osteoarthritis amongst the various groups, which were made on the basis the level of education of the participants. It was found out that some groups such as the bachelors or undergraduates were found to be the most aware about the risk factors related to OA as compared to the other groups.

The prevalence of OA in Pakistan as per The Global Burden of Disease Study conducted in 2013 in Pakistan was 26.67/1,000.¹¹ In Greece a high prevalence of low serum levels of Vitamin D was found in a population with OA.¹² This confirmed our results regarding the awareness Vitamin D deficiency being a risk factor for OA, where 91% bachelors agreed.

Our study showed that 66% of the participants were aware of the fact that women were more prone to OA than men. A study done in Bahawalpur, Pakistan showed that knee osteoarthritis was higher in women, emphasizing that gender is an important risk factor which may be due to the sedentary lifestyle.¹³ According to a study, age was the most significant risk factor of osteoarthritis whereas in terms of gender, women were more susceptible than men.¹⁴

In a study conducted at a hospital in Karachi, the prevalence of OA was found to be 7.35% among 346 patients of rheumatic disorders.¹⁵ Our study confirmed that the participants were aware that joint injury was a risk factor for development of OA. In a study conducted in Farash Town Islamabad showed a positive association between osteoarthritis and BMI concluding that there was 11.63% prevalence of osteoarthritis in obese people.¹⁶ Obesity is considered to be a well-known risk factor amongst our participants.

Also, low literacy rate indicated that poor financial status contributes to less awareness.¹⁷ Sports related injuries are considered to be a major consequence of OA.¹⁸ Comorbid illnesses were found in coalition with OA and it was estimated that 59-87% of people with OA have at least one comorbid.¹⁹ The economic burden of Osteoarthritis is increasing among elderly and women due to higher prevalence of disease in this population group.²⁰

Knee pain due to OA was found to be due to obesity (2.66 95%, CI 2.15–3.28), women (1.68, 95%, CI 1.37–2.07), prior knee injury (2.83, 95%, CI 1.91–4.19).²¹ This study results conducted in UK correlates with our study, showing that there was awareness regarding such risk factors.

89% bachelors were fully under the perception that family history was a important risk factor for OA.

A study carried out in USA, claimed that the genetic variations of extra cellular matrix genes, as well as those related to bone density were concerned with the disease pathology.²² In our study we targeted on assessing the awareness about the risk factors so that they could be controlled early in life decreasing the overall burden of the disease in our country.

CONCLUSION

People at higher level of education status were more aware about the risk factors of osteoarthritis as compared to those at lower levels. This problem should be addressed by conducting awareness campaigns at schools and colleges level and including the important lifestyle modification strategies in the curriculum of the students. Awareness regarding increasing age, female gender, overweight, cold weather, and calcium deficiency should be addressed.

Conflict of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

AA & MH: Conception, Study design, , critical review manuscript & approval for the final version to be published.

JH: Co-supervision, Data acquisition, analysis and interpretation drafting & approval for the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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