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**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1450859>Available online at: <http://www.iajps.com>**Research Article****MUSCULOSKELETAL CONDITIONS MAY INCREASE THE
RISK OF CHRONIC DISEASE: A SYSTEMIC REVIEW AND
META-ANALYSIS OF COHORT STUDIES****¹Dr. Muhammad Awais, ²Dr. Shumaila Ashiq, ³Dr. Syeda Arooj Zahra**¹Ex-House Officer, Sir Ganga Ram Hospital, Lahore.²Ex-House Officer, Sir Ganga Ram Hospital, Lahore.³Ex-House Officer, Sir Ganga Ram Hospital, Lahore.**Abstract:**

A persistent co-occurrence is seen in conditions of Musculoskeletal and chronic diseases which shows a remarkable worldwide stress. One of the causes of the development of the chronic diseases, are might be the conditions of the musculoskeletal; although no comprehensive studies have been done till now to prove it. However, it is still to investigate whether problems of musculoskeletal are affecting knee or hips like osteoarthritis or pain in neck and back may lead to the chronic diseases.

A research was carried out by two independent researchers in order to see how the musculoskeletal conditions (Osteoarthritis, Neck or Back pain) and the diagnosis of chronic diseases (Diabetes, Chronic Respiratory Diseases, Cardiovascular Diseases, Obesity and Cancer) have an alliance; this was done with the help of CINAHL, Medline in Process, PsycINFO, Scopus, Embase, Web of Science and Medline on 8th February 2018. Extracting data and assessing qualities were the two main features of this research. The Random Effect Model was carried out in which balanced precautions were taken in the generic inverse variance method; considering every type of musculoskeletal and chronic conditions.

There are 3,086,612 individuals which undergone in the research. These are the results of the primary meta-analysis: for Musculoskeletal Conditions - Back Pain (n= 2) and Osteoarthritis (n= 8), while for Chronic Diseases- Cancer (n=1), Cardiovascular Diseases (n=8) and Diabetes (n=1).The results revealed from the 10 studies showed that people with musculoskeletal conditions have 17% more chances of developing chronic diseases. Exclusively, other results showed Confidence Interval 1.13-1.22, 12.52% and hazard ratio 1.17, 95%.

The risk of chronic diseases is increased with the probability of the musculoskeletal conditions, as stated by the results of a meta-analysis. As a matter of precaution, early diagnosis and prevention of musculoskeletal conditions which can lead to cardiovascular diseases can help in reducing the possibility of diseases. Hence, the effect of musculoskeletal conditions and cardiovascular diseases should be clear for a reducing the risks.

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1.0 INTRODUCTION:

The remarkable international burdens that are accountable for Chronic Diseases are mostly noncontagious. In 2015, the worldwide disability-adjusted life framed that cancer, chronic respiratory diseases, cardiovascular diseases, and diabetes' are the essential phenomenon causing those (Brusselsaers, 2018).

As a fact, in 2012, over 31 million of 56 million deaths worldwide have been caused due to these conditions. Additionally, Obesity has also been added to the list of leading chronic diseases with higher morbidity rate and all-cause mortality. Also, musculoskeletal conditions are one of the major causes of developing global disease burden. In disability-adjusted life, Neck and back pain is ranked on the fourth number with a likelihood of issues and sooner death. While accounting all the causes of global years lived with disability, it is investigated that around 13.6% of people have survived in 2015; however, people with neck and back pain is ranked 1st while people suffering from osteoarthritis is ranked 13th in number considering people with disabilities who have survived. No proper research is still done which could clarify the relationship between musculoskeletal conditions and chronic diseases. Hence, a proper research was carried out by the researcher to induce a link and the development stance between the musculoskeletal conditions and their effect on the chronic diseases by exerting a meta-analysis of longitudinal cohort studies and systematic review for closely investigating the association between them (Olsen, Lane and Green, 2016).

2.0 Methods

During the research, the registration was done with Prospero for the systematic review protocol. The guidelines of Meta-analysis of Observational Studies in Epidemiology (MOOSE) were addressed for the systematic reviews.

2.1 Study Eligibility

A direct relationship between the baseline musculoskeletal conditions and chronic diseases was made for studying the longitudinal cohort studies along with the outcomes or follow-ups. However, this study was not conducted for investigating casual considerations or mechanisms for any features of pain such as disabling pain or chronic diseases to which treatment is provided such as non-steroidal anti-inflammatory drugs. Moreover, studies with classifications such as interests, mixed population or where 75% of the individuals' were facing musculoskeletal conditions were included in the

research (Williams et al., 2018).

2.2 Data sources and search strategy

For a well-qualified study, Web of Science, Medline, CINAHL, Medline in Process, Embase, Scopus, and PsycINFO were consulted. The entire database was originated from 8th February 2018. For making things easy, shortcuts and keywords were made in the search section for chronic diseases (Cancer, obesity, diabetes, cardiovascular diseases, and chronic respiratory diseases), morbidity and Musculoskeletal diseases (neck/back pain and osteoarthritis) (Williams et al., 2018).

2.3 Study Selection

Endnote X7, the software was used for the removal of duplicated material proceeded by an in-depth study by two independent review authors who screened and concluded things based on the introduction title.

2.4 Data extraction

The first author was directed to extract all the relevant material and information from the study while the other author was subjected to overview them precisely in detail to check the precision and omissions that should be made. Divergence or any confusion in the study was resolved by a mutual consideration. Nine major classifications were made during the research. These are classified among population description, study source, number of patients with the musculoskeletal condition, a measure of musculoskeletal conditions, age, sex, adjustments of any covariates, a measure of chronic diseases and follow up times. These were then tabulated accordingly (Ungrasert et al., 2018).

2.5 Data synthesis

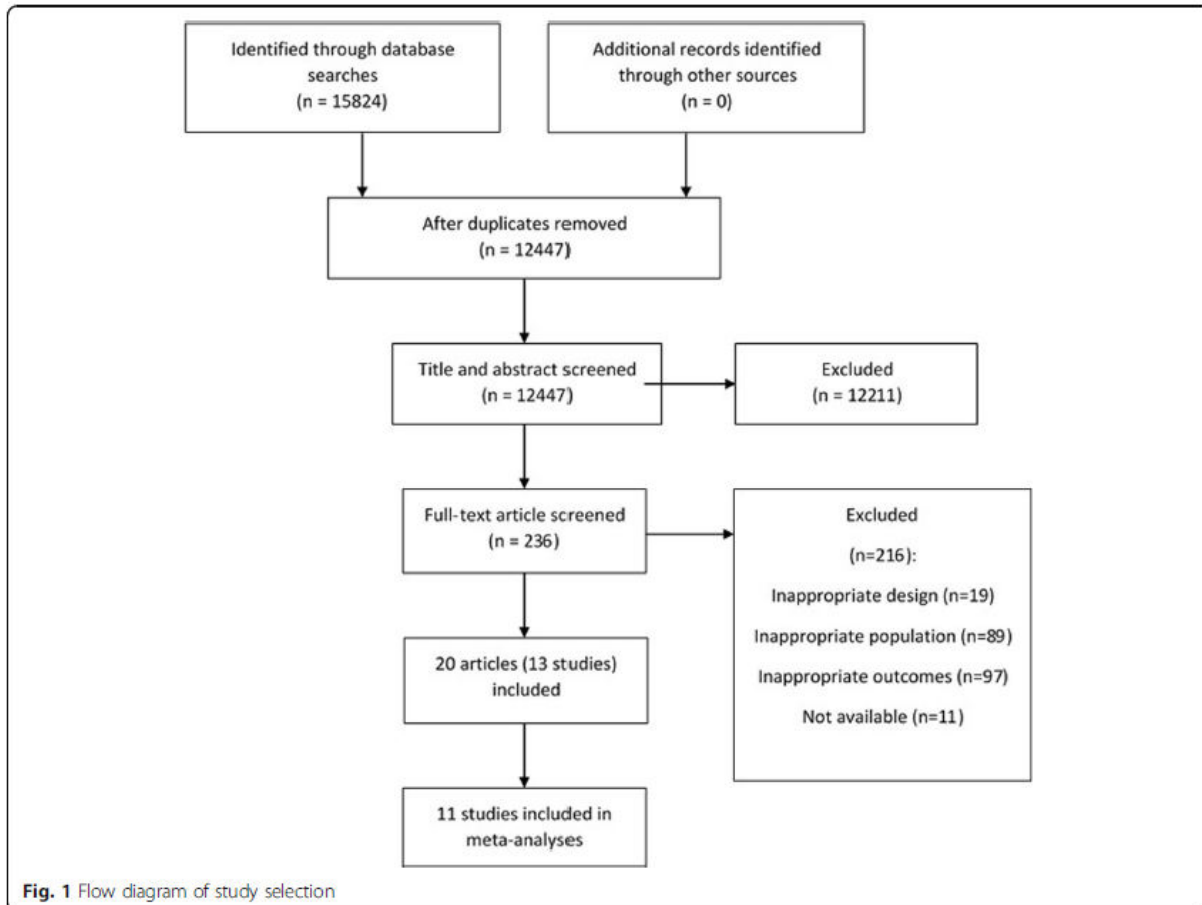
The generic inverse variance method was used to deliberate the amalgamated Hazard Ratios (HRs) exploring the effect of the vulnerability of the musculoskeletal conditions and their effect on the chronic diseases or outcomes. Also, the Confidence Intervals (CIs) were also investigated which was measured to be 95%. The random effect model was also used, which did not show the similar outcomes of Hazard Ratio and Confidence Interval to be 95% as a result of heterogeneity. All inferences of musculoskeletal conditions and chronic diseases were estimated in the primary meta-analysis. All the studies were closely reviewed and pooled estimates were in cooperated. Pooled estimates were also overlooked and overviewed by discriminating the results of musculoskeletal conditions and chronic diseases. Lastly, unadjusted study portions were also studied by the secondary analysis (Ungrasert et al., 2018).

3.0 RESULTS:

3.1 Study Selection

There were 15824 different articles through which 12447 endured after duplicates elimination. Accordingly there were 236 other articles which persisted after abstract and title screen; of these 205 basically excluded after full-text analysis. Similarly, 11 abstracts also omitted due to insufficient data

sources and due to no response from authors. Due to sufficient data and analyses information, two abstracts included in the review. This remains 20 articles which met the criteria for insertion. These articles are stated on thirteen studies and there was enough reported data from eleven studies to be encompassed in the meta-analysis.



(Source: Williams et al., 2018)

3.2 Study characteristics

With the mean follow up of 14-16 years there are thirteen studies comprised data from overall 3,086,612 persons. Of those stated studies a mean respondent age, > 50 years and 3 studies stated a mean of > 70 years. Furthermore, all these studies are published in the English language. The Musculoskeletal exposure was common OA in 7 studies, keen OA represented in 3 studies, hip OA also in 3 studies, neck pain in 1 study and back pain in 4 studies. The chronic disease (result) was cardiovascular as showed in 9 studies, diabetes in 3, obesity in 1 and cancer is also in one study. In all studies, those patients are excluded who stated the

interest at baseline outcome (Williams et al., 2018).

3.3 Risk of Chronic Disease according to Musculoskeletal Conditions

Eleven studies with enough data sources from meta-analysis stated ten regulated estimates from 2,686,113 persons and 5 unregulated estimates from 612,873 persons. According to a basic meta-analysis of regulated estimates a statistically important elevated chronic disease risk from conditions of musculoskeletal (HR 1.17, with CI 95%; 1.13-1.22, I² 52% according to ten studies). These studies are frequently regulated for BMI, age, sex, hypertension, hyperlipidemia, diabetes and smoking. The

unregulated meta-analysis further represented a highly statistically important association (HR 1.39, 95% with Confidence Interval 1.23–1.58, I² 94%, according to 5 Studies) (Williams et al., 2018).

3.4 Assessment by Condition

According to the combination of all studies the adjusted estimates which analyzed OA as the view of revealed a statistically important elevated chronic disease risk (HR 1.16, with 95% Confidence Interval, 1.14-1.18 I² 0% according to 8 studies). As per seven out of eight studies, OA as the viewpoint analyzed the increased cardiovascular disease risk (Zhang et al., 2017).

4.0 DISCUSSION:

The meta-analysis and systematic review comprising the data from 2,686,113 persons represented that musculoskeletal conditions in people have an increase of 17% in the risk of emerging a chronic disease as compared with those people who have not this condition. Most of the studies comprised OA as the viewpoint and cardiovascular disease as result; assessment of these researches exposed that state those people who have OA are at 16% elevated risk of cardiovascular disease development, with a comparison of those who have not. Two basic studies concentrating on back pain and one individual research exposed neck pain, those persons who have suffered from back pain had greater cardiovascular disease risk and those who observed back and neck pain had an elevated cancer risk (Zhang et al., 2018).

According to this research, a casual interconnection found between chronic disease and common musculoskeletal conditions drawn strong outputs due to poor regulations, the assessment approaches employed by the comprised researches, with study lack to investigate different condition other than cardiovascular disease and OA. As per our best-researched knowledge, this is the initial attempt as for meta-analysis of cohort longitudinal which may estimate the chronic developing risk in those persons who have highly burdensome and prevalent musculoskeletal conditions, pain in back and in neck or knee or hip OA. In this research, we utilized an exclusive and comprehensive strategy of search, as studies were not imperfect by the date of publication or any issue of language, and we also evaluated biases risk utilizing a particular observational study too (Zhe and Hang, 2016).

The deficiency of sufficient low bias risk studies to positively test of complete hypothesis signifies core limitation in the strength of inferences about the common hypothesis about conditions of

musculoskeletal. While there are more chances that OA elevates the cardiovascular disease risk, the deficiency research other conditions confine the generalize ability about outputs. According to the comprised small number of studies we basically unable to evaluate the features of different studies (just like the variation in viewpoint and result measurement, age, and sex on the observed estimates (Zhang et al., 2017).

Moreover, no research in this review analyzes concealed viewpoint to musculoskeletal conditions. It is confirmed that respondents who stated no musculoskeletal condition at baseline, such as unexposed, maintained a musculoskeletal condition in the time period of follow-up like exposed, but in this research, we could not analyze this from available studies. It is also not clear that viewpoint adjustment would lessen or intensify our estimate.

5.0 CONCLUSION:

This study assessed that musculoskeletal conditions may upsurge the subsequent chronic disease risk. Specifically, over 2 million people's meta-analysis represents that OA elevates the risk of cardiovascular disease development. The outputs advise that deterrence and initial treatment musculoskeletal conditions like back or neck pain and OA may participate in a specific role in other chronic diseases prevention. Specific targets for the prevention of chronic disease recently comprised lifestyle risk factors like physical inactivity, poor diet, consumption of alcohol and smoking, but the conditions of musculoskeletal are presently ignored. Recognizing their extensive global burden, coping musculoskeletal conditions through public health approaches may have an important effect on some other chronic diseases like cardiovascular disease.

REFERENCES:

1. Brusselsaers, N. (2018). Chronic Proton Pump Inhibitors May Increase Cancer Risk. *Science Trends*.
2. Olsen, C., Lane, S. and Green, A. (2016). Increased risk of chronic diseases. *Medical Research Journal*, 26(2), pp.188-194.
3. Ungprasert, P., Wijarnpreecha, K., Thongprayoon, C. and Cheungpasitporn, W. (2018). Peripheral arterial disease and risk of hip fracture: A systematic review and meta-analysis of cohort studies. *Journal of Postgraduate Medicine*, 0(0), p.0.
4. Wang, J., Guo, P., Gao, Z., Zhou, B., Ren, L., Chen, Y. and Zhou, Q. (2017). Elevated bilirubin levels and risk of developing chronic kidney disease: a dose-response meta-analysis and systematic review of cohort studies. *International*

- Urology and Nephrology, 50(2), pp.275-287.
5. Williams, A., Kamper, S., Wiggers, J., O'Brien, K., Lee, H., Wolfenden, L., Yoong, S., Robson, E., McAuley, J., Hartvigsen, J. and Williams, C. (2018). Musculoskeletal conditions may increase the risk of chronic disease: a systematic review and meta-analysis of cohort studies. *BMC Medicine*, 16(1).
 6. Zhang, M., Wang, N., Zhai, Z., Zhang, M., Zhou, R., Liu, Y. and Yang, Y. (2018). Incidence and risk factors of chronic thromboembolic pulmonary hypertension after acute pulmonary embolism: a systematic review and meta-analysis of cohort studies. *Journal of Thoracic Disease*, 10(8), pp.4751-4763.
 7. Zhang, X., Jiang, N., Wang, L., Liu, H. and He, R. (2017). Chronic obstructive pulmonary disease and risk of lung cancer: a meta-analysis of prospective cohort studies. *Oncotarget*, 8(44).
 8. Zhe, M. and Hang, Z. (2016). Nephrolithiasis as a risk factor of chronic kidney disease: a meta-analysis of cohort studies with 4,770,691 participants. *Urolithiasis*, 45(5), pp.441-448.