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Prevalence of common musculoskeletal disorders among rheumatology patients in Imo state: A focus on occupation and educational qualification

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Abstract
Musculoskeletal disorders are health conditions that are highly neglected in the country. They are among the most prevalent chronic diseases that can affect a wide range of age groups globally, but little attention is given to them in terms of early diagnosis and treatment. Despite living with them and their disability, many people with these diseases look well. The purpose of the study was therefore, to determine the socio-demographic variables associated with prevalence of common musculoskeletal disorders among rheumatology patients in Imo State from 2016 to 2022. The target population consisted of 1697 case files of rheumatology patients. Three research questions postulated were answered using percentages, and charts/three hypotheses that were stated were tested using chi-square statistics at 0.05 level of significance. The result of the study among others showed that 7697 patients were living with musculosketal disorders from 2016 to 2022.The prevalence of common musculoskeletal disorders was high in Imo State over the five years period. These data revealed that osteoarthritis (OA) showed the highest prevalence of 41 percent, followed by rheumatoid arthritis, 34.3 percent; Gout. 9.2 percent; psoriatic arthritis 8.8 percent and juvine ideopathetic arthritis 6.6 percent, recorded the lowest prevalence. Prevalence of musculoskeletal disorders among rheumatology patients differed significantly in Imo State based on years ($p < 0.05$). There was a significant difference in the prevalence of common musculoskeletal disorders of patients in Imo State in relation to their occupation ($p < 0.05$). The finding also showed that there was no significant difference in the prevalence of common musculoskeletal disorders of patients in Imo State in relation to their educational qualification ($p > 0.05$). Based on the findings, it was recommended among others that there should be intensive sanitization program for the public by the government through mass media platforms on the prevalence of common musculoskeletal disorders and improve the working environment of public servants. Government should organize and sponsor periodic medical checkups for people and public servants for early detection of common musculoskeletal disorders since the prevalence of the disease was high among them.

Keywords: musculoskeletal disorder, prevalence

Introduction
In terms of early diagnosis and treatment, musculoskeletal problems rank among the most common chronic diseases that can afflict people of all ages worldwide. However, they receive little to no attention. Rheumatoid arthritis, gout, systemic hepatitis, osteoarthritis, juvenile idiopathic arthritis, psoriatic arthritis, and many others are examples of such disorders. More people than other disease groups are affected by musculoskeletal disorders (MsDs). MsDs afflict one-third of persons of all ages at some point in their lifetime (Springs, 2019) [22]. Musculoskeletal problems are common throughout the life course, according to the World Health Organization (WHO, 2019) [10]. They are not just conditions of elderly people. Approximately one in three persons, including children, have a musculoskeletal ailment, according to the WHO.

Musculoskeletal conditions are frequently referred to as "silent" diseases. Many persons with these diseases appear healthy while having them and their impairment, however these illnesses afflict a lot of people (patients, their family members, caregivers, and health care providers). Health care professionals and other parties concerned will start to raise awareness of these illnesses and not to ignore them by realizing how prevalent and severe musculoskeletal problems actually are. These patients can be found at various hospitals' rheumatology clinics. A physician who focuses on treating these conditions is a rheumatologist. Rheumatology is a field of medicine that specializes in treating arthritis and other joint disorders. Rheumatic diseases, usually known as musculoskeletal ailments, can be generically divided into three categories: spinal disorders (WHO, 2020) [29].

They are major contributors to morbidity and disability, which results in significant health care costs and employment losses. They are characterized by pain, which causes a loss in function and range of motion in one or more musculoskeletal system regions (Shiel, 2018) [21]. There are symptoms of inflammation, swelling, redness, and warmth in the affected areas in several of these disorders. They are ailments that impact the skeletal system and muscles. Some individuals refer to all musculoskeletal conditions as "arthritis." One of the musculoskeletal illnesses is arthritis, which is defined as joint inflammation. Musculoskeletal disorders include more than 200 distinct diseases, according to Higvera (2017) [13]. Many other signs and symptoms may result from them, including eye irritation or infections, rashes and sores, pain in the neck, spine, or back, difficulty breathing deeply, muscle soreness, tenderness, persistent joint pain, and inflammation indicated by joint swelling (Higvera, 2017) [13].

The prevalence of MsDs in this study will be determined by the number of cases of these various MsDs that have been

reported based on the aforementioned signs and symptoms. The prevalence of an illness is the proportion of people who have it at a certain time or over an extended period of time (Public Health Agency, 2020) [20]. The main idea behind prevalence is that it takes into account both new and pre-existing disease instances. Prevalence, as defined by Harvard School of Public Health in 2021, is the total number of people in a population who are afflicted with a disease or health condition at a particular moment, typically expressed as a percentage of the population. It can be viewed as an indicator of how frequently a disease, illness, or other health problem occurs. There are three main types of prevalence, according to the National Institute of Mental Health (2017): point prevalence, which is the percentage of a population who has the characteristic at a particular time. Another is period prevalence, which is the percentage of a population that possesses the traits at any particular moment throughout an interest period. The third is lifetime prevalence, which measures the percentage of a population who has ever exhibited the traits at some point in time. The prevalence of periods will be the topic of this investigation.

The percentage of the population who has a mental health disorder at any given time throughout a certain time period of interest is referred to as the period prevalence rate of MsDs. The researchers' interest time frame for this study will be from 2016 to 2020. The researcher chose this time period because there are already records of the musculoskeletal illness at this time, and the records will be available for future research. A recent examination of global Burden of Disease (GBD) data revealed that over 1.71 billion individuals worldwide suffer musculoskeletal problems, according to World Health Organization (2020). People of all ages are afflicted by musculoskeletal problems, however the prevalence varies by age and diagnosis. According to Laday (2020), 149 million individuals, or 17% of all people with disabilities, live with musculoskeletal problems, which are the main cause of years lived with disability globally. According to data from 2017, there were over 1.3 billion (95%) cases of musculoskeletal illnesses globally, resulting in 122,300 fatalities and 138.7 million years of life with a handicap.

Described in a study published in Arthritis and Rheumatology in 2020, musculoskeletal diseases place a tremendous strain on society. The Global Burden of Disease (2019) report's findings were summarized in this study, which found that musculoskeletal diseases are underappreciated despite the high costs they impose on patients, society, and the health system. Furthermore, according to Arthritis and Rheumatology, a global reaction is required. Additionally, other approaches that can address some of the key and changeable risk factors of musculoskeletal illnesses, such as obesity, poor nutrition, smoking, and sedentary lifestyles, should be combined with this. MsDs are quite common in several African countries, with prevalence rates ranging from 15 percent to 93.6 percent, according to Wanyonyi and Frantz (2015). The industrial sector, which includes mining, blacksmithing, and many other activities, is responsible for about 20% of this overall prevalence. Various environmental, socioeconomic, and genetic factors can make someone more susceptible to musculoskeletal problems (Nwachukwu *et al*, 2009; Kebede *et al*, 2014; Joker & Joker, 2018). Social and demographic factors are related to or involved in socio-demographic factors. These elements can also be referred to as socio-demographic variables or statistically stated socio-economic characteristics of a population, such as education and occupation (Koukoulis, *et al*, 2002; Usenbo *et al*, 2015; Kooffreh *et al*, 2016).

One can be at very high risk of getting one or more musculoskeletal illnesses due to a number of circumstances. When occupation was taken into account, Bernard (2003) claimed that education is a risk factor for musculoskeletal problems in men. To the best of the researchers' knowledge, Imo State has not been the subject of any research on this matter. This is the rationale for the study's design, which looked at the socio-demographic factors (such occupation and educational attainment) and prevalence of typical musculoskeletal illnesses among rheumatology patients in Imo State.

Statement of the Problem

Musculoskeletal problems are the second most common cause of disability worldwide, according to reports on the global health burden of disease. Nearly 2 billion people worldwide are estimated to have musculoskeletal problems, which place a significant financial burden on patients and result in an annual economic burden of more than $200 billion worldwide. This estimate is based on the results of the global health burden of illness research. Due to the high prevalence of musculoskeletal-related complaints, there is. Studies on the pattern of osteoarthritis, prevalence of rheumatoid arthritis, and systemic lupus carried out by Ukibe *et al*. (2015) [25], Okoroiwu *et al*. (2016) [19], and Faloye *et al*. (2020) [7] in Nigeria revealed a significant prevalence of particular forms of musculoskeletal illnesses. None of the studies mentioned above or other relevant studies conducted out in Nigeria by other researchers involved patients in Imo State who had other common musculoskeletal illnesses. This study was created to ascertain the socio-demographic factors connected to the frequency of typical musculoskeletal illnesses among rheumatology patients in Imo State from 2016 to 2020.

Research Questions

The following research questions guided the study:

1. What is the prevalence of common musculoskeletal disorders among patients in Imo State from 2016 to 2020?
2. What is the influence of occupation on the prevalence of common musculoskeletal disorders among patients in Imo state from 2016 to 2020?
3. What is the influence of education qualification on the prevalence of common musculoskeletal disorders among patients in Imo state from 2016 to 2020?

Hypotheses

The following null hypotheses were tested at 0.05 level of significance:

1. There is no significant difference in the prevalence of musculoskeletal disorders of patients in Imo State from 2016 to 2020.
2. There is no significant difference in the prevalence of musculoskeletal disorders of patients in Imo State in relation to their occupation.
3. There is no significant difference in the prevalence of musculoskeletal disorders of patients in Imo State in relation to their education qualification.

Method

The study adopted ex-post facto research design. It was carried out in Imo State in south East Nigeria. Population of this study consisted of all the 17,787 patients both old and young who were screened for musculoskeletal disorders in the hospitals that offer services on musculoskeletal disorders in Imo State between 2016 -2020. The two hospitals are; Imo State Specialist Hospital Owerri and Mark of Glory Hospital Owerri. Patients case files represent the actual patients for the study since the study mainly concerned about the patient past records. The entire population was studied without sampling technique. The instrument for data collection for this study was the folders of the patients (a proforma). Medical record officers from Imo State Specialist Hospital Owerri and Mark of Glory Hospital ensured the validity of the medical records. The folder is a known, standardized data collection tool currently in use in Health facilities. Therefore, no reliability was required. Data collected were analyzed using descriptive statistics of frequency count and percentages to answer the research questions while inferential statistics of chi-square was used to test the hypotheses at $p < 0.05$.

Results

This section presents the analysis of data for the study according to the research questions and hypotheses.

Table 1: Prevalence of common musculoskeletal disorders among patients in Imo State from 2016 to 2020

Year	Common Musculoskeletal Disorders (CMD)					Prevalence per year	
Year	**RA**	**OA**	**Gout**	**PA**	**JIA**	**Frequency**	**Percent (%)**
2016	484	601	146	130	95	3472	45.11
2017	558	646	138	125	105	3589	46.63
2018	465	585	110	146	90	3414	44.35
2019	607	686	187	155	117	3771	48.99
2020	524	648	126	123	100	3541	46
Total	2638	3166	707	679	507	17787	100
Prevalence (%)							55.18

Prevalence = 55.2%

Table 1 shows the prevalence of common musculoskeletal disorders among patients in Imo State from 2016 to 2020. Out of all the patients tested, a total of 17,787 cases of common musculoskeletal disorders was recorded within the period under study with a prevalence rate of 55.2%. The prevalence for each year during this study were as follows: 2016 (45.1%), 2017 (46.6%), 2018 (44.3%), 2019 (48.9%) and 2020 (46.0%). Within the period assessed, the prevalence was highest among in 2019 and lowest in 2018.

Table 2: Prevalence of Common Musculoskeletal Disorders Among Patients In Imo State Based On Occupation From 2016 to 2020.

Occupation							
CMD	Public Servant	Self employed	Students	Total	χ^2_{Cal}	*df*	$p-value$
	f %	f %	f %	f %			
RA	1372 17.8	937 12.2	329 4.3	2638 34.3			
OA	1658 21.5	1106 14.4	402 5.2	3166 41.1	74.200	8	.015
Gout	368 4.8	242 3.1	97 1.3	707 9.2			
PA	355 4.6	229 3.0	95 1.2	679 8.8			
JIA	254 3.3	182 2.4	71 0.9	507 6.6			
Total	4007 52.1	2696 35.0	994 12.9	7697 100			

Table 2 shows the prevalence of common musculoskeletal disorders among patients in Imo State from 2016 to 2020 based on occupation. The result revealed that the prevalence of all the common musculoskeletal disorder put together was highest among public servants with 52.1 percent, self-employed with 35 percent and lowest among students with 12.9 percent. Those diagnosed with OA showed the highest prevalence of 41.1 percent followed by those diagnosed with RA with prevalence of 34.3 percent. Those diagnosed with JIA were presented with least prevalence of 6.6 percent. Bar chart showing the prevalence of common musculoskeletal disorders among patients in Imo State from 2016 to 2020 based on occupation is shown in Figure 4 below.

Table 3: Prevalence of Common Musculoskeletal Disorders among Patients In Imo State Based On Educational Qualification From 2016 to 2020

Educational Qualification								
CMD	FSLC	WAEC	Degree	No Edu.	Total	χ^2_{Cal}	*df*	$p-value$
	f %	f %	f %	f %	f %			
RA	584 7.6	595 7.7	421 5.5	1038 13.5	2638 34.3			
OA	663 8.6	809 10.5	549 7.1	1145 14.9	3166 41.1	122.34	12	.056
Gout	149 1.9	144 1.9	93 1.2	321 4.2	707 9.2			
PA	160 2.1	160 2.6	116 1.5	243 3.2	679 8.8			
JIA	79 1.0	135 1.8	90 1.7	203 2.6	507 6.6			
Total	1635 21.2	1843 23.9	1269 16.4	2950 38.3	7697 100			

Table 3 shows the prevalence of common musculoskeletal disorders among patients in Imo State from 2016 to 2020 based on educational qualification. The result revealed that the highest prevalence was recorded among patients with the no educational qualification with 38.3 percent, WAEC with 23.9 percent, FSLC with 21.2 percent and lowest with Degree 16.4 percent. Those diagnosed with OA showed the highest prevalence of 41.1 percent followed by those diagnosed with RA with prevalence of 34.3 percent. Those diagnosed with JIA were presented with least prevalence of 6.6 percent. Bar chart showing the prevalence of common musculoskeletal disorders among patients in Imo State from

2016 to 2020 based on educational qualification is shown in Figure 5 below.

Testing of Hypotheses

H_{01}: There is no significant difference in the prevalence of common musculoskeletal disorders of patients in Imo State from 2016 to 2020.

Table 4: Summary of Chi-square on the prevalence of common musculoskeletal disorders among patients in Imo State from 2016 to 2020

Year	O	E	χ^2_{Cal}	χ^2_{Crit}	df	$p-value$
2016	3472	3557.4				
2017	3589	3557.4				
2018	3414	3557.4	21.013	9.49	4	0.012
2019	3771	3557.4				
2020	3541	3557.4				
Total	17787					

From the summary of Chi-square analysis in Table 4, the statement of hypothesis 1 is rejected; implying that there is a significant difference in the prevalence of common musculoskeletal disorders of patients in Imo State from 2016 to 2020. This is because, the p-value (Sig. = 0.012) is less than 0.05 alpha level.

H_{02}: Occupation does not significantly influence the prevalence of common musculoskeletal disorders among patients in Imo state from 2016 to 2020.

Table 5: Summary of Chi-square on the prevalence of common musculoskeletal disorders among patients in Imo State from 2016 to 2020 based on occupation

Variable	χ^2_{Cal}	df	$p-value$	*Decision*
CMD	74.200	8	.015	Significant
Occupation				

From the summary of Chi-square analysis in Table 5, the statement of hypothesis 2 is rejected; implying that there is a significant difference in the prevalence of common musculoskeletal disorders of patients in Imo State in relation to their occupation. This is because, the p-value (Sig. = 0.015) is less than 0.05 alpha level.

H_{03}: There is no significant difference in the prevalence of common musculoskeletal disorders of patients in Imo State in relation to their educational qualification.

Table 6: Summary of Chi-square on the prevalence of common musculoskeletal disorders among patients in Imo State from 2016 to 2020 based on educational qualification.

Variable	χ^2_{Cal}	df	$p-value$	*Decision*
CMD	122.34	12	0.56	No Significant
Educational qualification				

From the summary of Chi-square analysis in Table 6, the statement of hypothesis 3 is accepted; implying that there is no significant difference in the prevalence of common musculoskeletal disorders of patients in Imo State in relation to their educational qualification. This is because, the p-value (Sig. = 0.56) is greater than 0.05 alpha level.

Discussion of Findings

The findings of the study revealed that the prevalence of common musculoskeletal disorders within the period of study (2016-2020) was 55.2% from the total of 17,787 cases. This was lower than the rate of 48.8percent from the findings of Carmen, *et al*. (2019) in Cape Town but higher than 57.0 percent in Nigeria reported by Ekechukwu *et al* (2020). The findings of this study were in tandem with the report of the CDCP (2020) that Nigeria was seen as one of the countries with highest cases of common musculoskeletal disorders in the world and remained a major target in the global control of the disease. Furthermore, the number of all common musculoskeletal disorders cases reported annually in Imo state showed a declining trend. The study revealed that the prevalence for each year during this study were as follows: 2016 (45.1%), 2017 (46.6%), 2018 (44.3%), 2019 (48.9%) and 2020 (46.0%). Within the period assessed, the prevalence was highest among in 2019 and lowest in 2018. This was not surprising as chemotherapy and awareness creation might have played some roles in the reduction of trend of disorder. It could also be that common musculoskeletal disorders cases notification decreased over the period reviewed; it is most likely that the active case detection strategy might have been responsible for the observed common musculoskeletal disorders case detection rate decline. Thus, there may be need for the common musculoskeletal disorders programme in Imo State to consider incorporating this strategy into their programme. This may be similar to the entire nation.

This finding was in line with the findings of Faloye *et al* (2020) [7] that the trends of common musculoskeletal disorders burden and prevalence revealed that the state's disease burden was related to that of the entire nation. Though, this trend was also observed in the annual national reports and a related study from other states, it should, however, stimulate further research especially as regards the quality of the microscopic centres within the DOTS services of the State and Nigeria. Kebede *et al* (2014) found that the common musculoskeletal disorders burden was lower than previously thought, which may indicate better programme performance.

The findings of this study revealed that the prevalence of common musculoskeletal disorder was highest among public servants (52.1%), and self-employed (35%) and lowest among students (12.9%). This may be due to the fact that life style factor is also a risk factor of musculoskeletal disorder. For instance lack of physical activities could be a contributing factor to MsDs. There was also a significant difference in the prevalence of common musculoskeletal disorders of patients in Imo State in relation to their occupations. This is because work condition can contribute to common musculoskeletal disorders. This finding was in support of the finding of Intriago, *et al*. (2019) which showed that musculoskeletal disorders vary with occupation. Intriago, *et al*, also reported that in 2017, top three occupations that had the highest rates of musculoskeletal disorders were drivers, emergency responders, and nurses. This study was also in line with the present study because, it offers insight into the prevalence of common musculoskeletal disorder cases in Imo State from 016-2020 based on some demographic variables age, gender, occupation, educational qualification and mental status. Public servants had the highest prevalence rates amidst other professionals. This could be probably due to

the fact that common musculoskeletal symptom is related to the workplace. Lifestyle factors may be risk factors according to Centre for Control and Prevention (2018) the work condition contribute significantly to the common musculoskeletal symptoms. The condition is made worse or persists longer due to work condition such as sendentry lifestyle, sitting down for a long period of time daily exposure to whole body abration, working with the neck in chronic flexion position.

This is not surprising; as public service is among the major occupations of the people under study.

This finding is in consonant with that of Hong, *et al*. (2020) who reported that work environment and performance at work contribute significantly to the common musculoskeletal conditions. The condition is made worse or persists longer due to work conditions. Musculoskeletal disorders are associated with high cost to employers such as absenteeism, lost of productivity, and increased health care, disability, and worker's compensation costs. Aluoch and Wao (2009), in China, reported that the highest prevalence occurred among traders and farmers. Other professions reported to have the risk of the common musculoskeletal disorders include: teaching, timbering, driving, armed forces, and students. This by implication goes to show that certain occupations are associated with increased prevalence of common musculoskeletal disorders, most often of the knee and/or hip. These occupations include mining, construction, agriculture, and sectors of the service industry (Roubenoff, *et al*., 2019). Common features of these occupations are physically demanding/heavy labour tasks, lifting or carrying heavy loads, exposure to vibration, high risk of joint or tissue injury, and prolonged periods of working in awkward or unnatural postures such as kneeling and crawling (Bozkurt, *et al*., 2016). This implies that physical activity and weight management programmes are also important self-management activities for persons with common musculoskeletal disorders. It then means that occupation is a contributing factor to musculoskeletal disorders.

The findings of the study revealed that the highest prevalence was observed among patients with the no educational qualification with 38.3 percent followed by WAEC, 23.9 percent FSLC 21.2 percent and lowest with Degree. In addition, there was no significant difference in the prevalence of common musculoskeletal disorders cases in Imo State from 2016-2020 based on educational qualification of the patients. The implication of the above result is that literacy status may not be a factor associated with the prevalence of common musculoskeletal disorders. This may mean that even the educated people that have knowledge of MsDs may not seek for medical attention. The reason could be because of financial constraint or attitude of indulging in self-medication. This finding was in line with Bozkurt, *et al*. (2016) who reported that majority of the people that tested positive to common musculoskeletal disorders were people with less educational qualification. Common musculoskeletal disorders are more among those with no educational qualification followed by those with FSLC and WAEC. This was not surprising because people in the study area with higher educational qualification were usually working as public servants who had highest prevalence of common musculoskeletal disorders compared to others. This could be attributed to the rate of defaulted patients and the prevalence rate of therapy resistance among the patients with WAEC/NECO certificates. This was in tandem with the report of Carmen, *et al*. (2019) that common musculoskeletal disorders were attributed to rate of illiteracy in some patients. This was not surprising since the patients who attained lower level of education rarely knew the common musculoskeletal disorders from the States of Nigeria, and this might be contributing to the prevailing inappropriate care seeking behaviour and poor awareness of the conditions in Nigeria.

This by implication goes to show that the level of education of an individual can affect his/her approach to pain and treatment seeking behaviour.

Sometimes sufferers might not take the episodes of musculoskeletal pain serious because of ignorance of the possible consequences in form of reduced function and disability.

On the other hand an educated person might more often know when and how to get proper health care. He/She might recognize that pain can be a symptom of various other health related problems and diseases, and that pain if not properly managed can lead to reduced function and disability.

Education gives opportunity for the individual to explore the various ways of treatment and rehabilitation.

Conclusion

Based on the findings of the study, common musculoskeletal disorders is a pandemic disease particularly in developing countries which highly affect workers that are involved in less physical activities such public servants. Demographic factors such as year of prevalence, occupation and educational qualification have been observed to significantly contribute to the high prevalence of this disease. Therefore, this study concludes that workers that are involved in sedentary living and those with low educational qualification are likely to have higher prevalence of common musculoskeletal disorders cases. It was also concluded the demographic variables (such as occupation and educational qualification) associated with the level of prevalence of common musculoskeletal disorders among inhabitants in Imo State. There is need for concerted efforts of public health workers, to bring awareness campaigns in this State.

Recommendations

Based on the findings of the study, the following recommendations are made:

1. The state ministry of health and other foreign partners should plan and strategies ways to implement common musculoskeletal disorders prevention programme in Imo State to reduce the high prevalence rate.
2. Prevalence of common musculoskeletal disorders cases in Imo State from 2013-2017 was very high, therefore there should be intensive sensitization programme for the public by the government through mass and social media platforms and ensure that more counselors are trained.
3. The government should plan a workers specific enlightenment programme and seminars for non-educated citizens in the market since they are the most at risk group of common musculoskeletal disorders. This is because the findings revealed that common musculoskeletal disorders are occupation and educational qualification related.

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