

Arthritis and Health Related Quality of Life in Adult Outpatients in Trinidad: A Cross Sectional Study

Shastri Motilal

The University of the West Indies at Saint Augustine

Akshita Dawar (✉ akshitadawar@gmail.com)

The University of the West Indies at Saint Augustine <https://orcid.org/0000-0002-4078-2532>

Anil Mankee

Indiana Regional Medical Center

Nirupa Goberdhan

The University of the West Indies at Saint Augustine

Vishram Goberdhan

The University of the West Indies at Saint Augustine

Ayesha Greene

The University of the West Indies at Saint Augustine

Nicolette Greenslade

The University of the West Indies at Saint Augustine

Theana Guerra

The University of the West Indies at Saint Augustine

Nuha Hassan

The University of the West Indies at Saint Augustine

Brandon Hassett

The University of the West Indies at Saint Augustine

Andrille Hillhouse

The University of the West Indies at Saint Augustine

Tawfeeq Hosein

The University of the West Indies at Saint Augustine

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Abstract

BACKGROUND

Arthritis is a public health concern because of the high prevalence reported in various settings as well as its impact on health-related quality of life (HRQOL). The main objective of this study was to determine the prevalence of self-reported joint pain, arthritis and its associations with quality of life in a Trinidadian primary care population.

METHODS

A cross-sectional study was conducted on adult outpatients from 16 randomly selected primary care centres. An interviewer administered questionnaire was used to collect data on arthritis and HRQOL domains. Data was analysed using Statistical Package for the Social Sciences (SPSS, version 21) using Fisher's exact, Chi-square testing, correlation and t-tests. Regression analysis was also done for predictors of HRQOL.

RESULTS

Of 421 subjects approached, 392 (93%) completed this survey. The average age was 46 ± 17.8 years with 60.5% of respondents being female and 75% being of either East Indian or African descent. Joint pain in the past 6 months, reported by 57.9% of participants, was associated with female gender ($P = 0.016$), East Indian descent ($P = 0.001$), unemployment ($P < 0.001$) and primary school education level ($P < 0.001$). There was significant ($P < 0.005$) upset in all domains of quality of life in those with joint pain. Severity and duration of joint pain was also positively correlated with worse HRQOL scores ($P < 0.05$).

CONCLUSION

This study highlighted the high prevalence of self-reported joint pain in Trinidad and its negative effects on HRQOL. There is an urgent need to address arthritis and the resulting morbidity in this setting.

Background

Joint pain or arthritis can appear in different forms with symptoms of swelling, pain, stiffness and a decrease in motion (1). Arthritis can affect one's ability to enjoy a full and active life. The prevalence of arthritis has been documented in other countries however with respect to Trinidad, there are no available studies, reports or information on the epidemiology of the disease. Regionally, the prevalence of arthritis in the Caribbean and South American countries ranges from 23.8–56.0%. With respect to the Caribbean, a chikungunya virus outbreak began in late 2013 (2). The significance of this epidemic is not only limited to the severe acute arthritis from this mosquito borne illness but also the chronic joint complications (3, 4).

Complications associated with arthritis can also considerably affect patients' health related quality of life (HRQOL). HRQOL refers to "individuals' perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (5). The negative impact that various arthritides has on HRQOL has been well described for osteoarthritis (OA), rheumatoid arthritis (RA), gout, Chikungunya related arthritis and psoriatic arthritis (6–12). In the absence of local or regional data the objectives of this study were 1) To establish the prevalence of arthritis, joint related symptoms and associated risk factors in Trinidad, 2) To compare (HRQOL) in adult outpatients in Trinidad who report joint pain with those who do not.

Methodology

DESIGN

This cross-sectional study was performed in primary health care centres in the 4 major Regional Health Authorities (RHAs) throughout Trinidad. Ethical approval was obtained from all RHAs and from the Ethics Committee of the University of the West Indies. This study population was limited to adult outpatients who attended walk-in clinics at primary care centres in Trinidad during the period January to June 2016. A random sample of 4 health centres was selected from each RHA.

PARTICIPANTS

Convenience sampling was used to select eligible participants from each health centre. The inclusion criteria were adults over 18 years of age who were resident in Trinidad for the past 10 years. Exclusion criteria were non-nationals, those who were mentally incapacitated, hearing or visually impaired. The patient sample size of 383 was determined using an estimated arthritis prevalence of 50% with 95% confidence intervals and a 5% margin of error. The study targeted 400 patients who were conveniently sampled while awaited consultation with their physician or nurse.

SURVEY INSTRUMENT

The primary data was collected using a de novo questionnaire which was interviewer administered. The questionnaire was created based on literature review and was piloted with necessary amendments for ease of understanding in the local setting. The survey instrument consisted of three sections: Demographics, joint related symptoms and HRQOL which included 6 key domains. The HRQOL domains and questions were adapted from the existing QUALEFFO 41 questionnaire which examined the domains of mobility, activities of daily life, leisure and social activities, general health perception, jobs around the house and mental function (13).

STATISTICAL ANALYSIS

Categorical and continuous data were described as percentages and mean \pm standard deviation respectively. Associations for categorical variables were done using Fisher's exact and chi squared testing. T-tests were used for comparison of means and Pearson's correlation for relationship between

continuous data. Linear regression analyses for joint pain in the past six months (independent variable) and its effect on quality of life domain scores (dependent variable) were applied using a multivariable model adjusted for age, gender, ethnicity, employment and income. A P value < 0.05 was deemed statistically significant and reported for all associations. We analysed the data using Statistical Package for the Social Sciences (SPSS, version 21).

Results

Of the 421 candidates approached, 392 patients chose to participate in this study (response rate = 93%). The average age of the respondents was 46 ± 17.8 years. Of the 392 respondents 60.5% were female. The ethnic groups were Indo Trinidadian (38%) and Afro Trinidadian (36.7%) followed by 'Mixed' (23.2%). The majority of respondents were unemployed (52%). Primary, secondary and tertiary education was the highest level of education attained by 29.1%, 48.2% and 15.2% of the sample respectively.

Fifty eight percent of the respondents (225) reported experiencing joint pain within the last 6 months prior to their interview. Table 1 shows the associated features of this subset of participants. Of note one third of subjects reported pain everyday with one fifth complaining of pain all day. The knees, shoulders and ankles were the three most frequently affected joints. Almost half of these participants reported joint swelling and approximately one third reported that they had been diagnosed with arthritis. Chikungunya related arthritis, OA and lupus were the three most commonly reported arthritides.

Table 1
 – Frequency of joint related symptoms and self-reported arthritides in those who reported joint pain in the past 6 months (n = 225)

Variable (N = 225)	Value[#]
Duration of joint pain in months	57.99 ± 87.1
Days per week experiencing joint pain	17.0%
1 day or less per week	37.5%
2–3 days per week	12.1%
4–6 days per week	33.5%
Everyday	
Time of day joint pain occurs	47.8%
Daytime	31.4%
Nighttime	20.8%
All day	
Severity of joint pains	5.09 ± 2.32
on average	7.83 ± 2.16
at its worst	
Location of Joint Pain	37.4%
Shoulder	18.5%
Elbow	22.9%
Wrists	63.4%
Knees	29.1%
Ankles	22.9%
Fingers	33.5%
Others	

[#]Values reported as percentages or Mean ± standard deviation

Variable (N = 225)	Value[#]
Presence of Joint Pain in Immediate Family	58.1%
Yes	30.0%
No	11.9%
Unsure	
Joint Swelling	48.2%
Yes	51.8%
No	
Joint Stiffness	70.8%
Yes	29.2%
No	
Joint affected by change in weather	63.3%
Yes	31.0%
No	5.8%
I don't know	
Received a prior diagnosis of arthritis	29.2%
Yes	68.6%
No	
Self-reported diagnosis of:	7.6%
Rheumatoid Arthritis	9.8%
Osteoarthritis	1.3%
Gout	12.0%
Chikungunya	9.3%
Lupus	
[#] Values reported as percentages or Mean ± standard deviation	

Associations Between Joint Pain and Demographics

Table 2 shows the associations between self-reported joint pains in the past 6 months and demographics. The average age in those reporting joints pain was significantly higher compared to those

who did not (50.8 vs. 41.2 yrs, $P < 0.001$). Seventy four percent of those older than 50 years of age reported joint pain compared to 45% of those in the 18–50 age group ($P < 0.001$). Of persons that reported pain, 65.5% were women compared to 34.5% of men ($P = 0.016$). Other factors that were positively associated with joint pain were East Indian ethnicity, being unemployed and attaining only a primary school education.

Table 2
– RELATIONSHIP BETWEEN SELF-REPORTED JOINT PAIN IN THE PAST 6 MONTHS AND DEMOGRAPHICS

Demographic	Joint pain within the past 6 months (N = 392)		P value
	YES	NO	
#Age (years, mean ± SD)	50.8 ± 17.2	41.2 ± 17.2	< 0.001
*Gender	78 (34.5%)	78 (47%)	0.016
Male	148 (65.5%)	88 (53%)	
Female			
*Ethnicity	76 (33.6%)	67 (40.4%)	0.200
African	102 (45.1%)	47 (28.3%)	0.001
East Indian	48 (21.2%)	52 (31.3%)	0.026
Other			
*Employment status	135 (59.7%)	68 (41%)	< 0.001
Unemployed	42 (18.6%)	36 (21.7%)	0.446
Employed (Public Sector)	49 (21.7%)	62 (37.3%)	< 0.001
Employed (Private Sector)			
*Education Level	82 (36.3%)	32 (19.3%)	< 0.001
Primary	90 (39.8%)	98 (59.0%)	< 0.001
Secondary	54 (23.9%)	36 (21.7%)	0.629
Tertiary, advanced degree or professional certificate			
#Independent sample t test, *Fisher's exact test			

Of the 226 patients reporting joint pain in the past 6 months the severity of joint pain “on average” and “at its worst” was gauged on a 1–10 scale with 1 being the least and 10 being the worst. For average

pain there were significant associations between ethnicity and RHA. In post hoc Bonferroni adjusted analyses, “average pain” scores were remarkably higher in East Indian vs. Other ($P= 0.09$) and African vs. Other ($P= 0.037$) Similar analyses for “worst pain” revealed significantly higher scores in East Indians vs. Other ($P= 0.001$) and primary education level vs. tertiary level ($P= 0.004$).

Associations Between Self-Reported Joint Pain in Past 6 Months and Quality of Life Indicators.

Table 3
REGRESSION ANALYSES FOR JOINT PAIN IN THE PAST SIX MONTHS (INDEPENDENT VARIABLE) AND ITS EFFECTS ON QUALITY OF LIFE DOMAIN SCORES (DEPENDENT VARIABLE)

Quality of Life Domain Outcome	F statistic (degrees freedom)	R ²	Adjusted R ²	#P value	*P value
Mobility	86.8 (1,384)	0.184	0.182	< 0.001	< 0.001
Activities of daily life	26.4 (1, 389)	0.064	0.061	< 0.001	< 0.001
Leisure and social activities	16.4 (1, 384)	0.041	0.039	< 0.001	0.007
General health perception	22.1 (1,388)	0.054	0.051	< 0.001	< 0.001
Jobs around the house	43.6 (1,386)	0.101	0.099	< 0.001	< 0.001
Mental function	8.2 (1, 387)	0.021	0.018	0.004	0.006
#Model includes only self-reported joint pain in past 6 months as independent variable					
*Fully adjusted multivariable model for self-reported joint pain in past 6 months adjusted for age, gender, ethnicity, employment and income.					

Of the 226 patients who self-reported joint pain, 50% (29% of the entire sample) reported receiving a diagnosis of arthritis. In patients receiving a diagnosis of arthritis there were statistically significant associations between most domains with the exception of leisure and social activities as well as general health perception.

Table 3 shows the regression analyses for joint pain in the past six months and its effect on quality of life domain scores. A fully adjusted multivariable model for self-reported joint pain in the past 6 months was applied and after adjustment for demographics the association between self-reported joint pain and quality of life measures persisted. Using quality of life as the outcome and joint pain as the predictor, results depict a statistically significant relation between joint pain and all quality of life domains.

Some significant associations between self-reported diagnoses of various forms of arthritis were also found. OA sufferers experienced greater disruption in mobility compared to those who did not admit to

being diagnosed with OA ($P= 0.03$). Interference with mobility, jobs around the house and activities of daily living scores were also significantly higher for those participants who self-reported a diagnosis of RA compared to those who did not ($P< 0.001$, $P< 0.001$ and $P= 0.014$ respectively). Systemic lupus erythematosus was associated with worse scores for jobs around the house ($P= 0.006$) and interestingly higher scores for leisure and social activities ($P= 0.004$), general health perception ($P= 0.038$) and mental function ($P< 0.001$.) For participants who reported a past diagnosis of gout or chikungunya arthritis, there was no significant worsening of any quality of life domains, in comparison to those who did not.

Relationship between pain severity, duration and quality of life indicators.

Correlations between pain duration, severity and QOL domains were also done which are shown in Table 4. There were significant positive correlations between pain duration and severity, and interference with mobility, activities of daily life, general health perception and jobs around the house.

Table 4
– CORRELATIONS BETWEEN PAIN SEVERITY DURATION AND QUALITY OF LIFE INDICATORS

Quality of Life Domain (range of scores)	Duration of joint pain in months r^* (P value)	Severity of pain at its worst r^* (P value)	Severity of pain on average r^* (P value)
Mobility	0.25 (< 0.001)	0.34 (< 0.001)	0.31 (< 0.001)
Activities of daily life	0.19 (0.004)	0.27 (< 0.001)	0.22 (0.001)
Leisure and social activities	-0.13 (0.055)	-0.10 (0.133)	-0.05 (0.450)
General health perception	0.14 (0.032)	0.21 (0.002)	0.14 (0.037)
Jobs around the house	0.19 (0.004)	0.26 (< 0.001)	0.23 (< 0.001)
Mental function	0.11 (0.103)	0.07 (0.297)	0.09 (0.164)
*Pearson's Correlation			

Association between self-reported joint pain in the past six months and medication use.

Almost two-thirds of those with joint pain (60.6%) in the past 6 months reported medication use for the pain. Of the 225 persons who complained of joint pain Table 5 shows the proportions who used analgesics or supplements.

Table 5
ASSOCIATION BETWEEN SELF
REPORTED JOINT PAIN AND
MEDICATION USE

Drug used n = 225	
Acetaminophen	95 (42.0%)
NSAIDs eg. Ibuprofen	71 (31.4%)
Steroids (prednisolone)	25 (11.1%)
Omega 3 fish oils	45 (19.9%)
Hydroxychloroquine	20 (8.8%)
Methotrexate	3 (1.3%)

Medication use was positively correlated with pain scores. Mean “pain on average” scores were significantly higher in those who used medication compared to those who did not (5.42 vs 4.5, $P= 0.006$) Similarly mean “pain at its worst” scores were significantly higher in those who used medication compared to those who did not (8.3 vs 7.2, $P= 0.001$).

Self-reported arthritides and correlates

There were no significant associations between a self-reported diagnosis of lupus, gout, OA, Chkungunya or RA and gender. With regards to age however patients self-reporting OA were significantly older 65yrs. vs. 45yrs in those who did not report OA, $P < 0.001$. Similarly, those who reported RA (62yrs) were significantly older than those without this condition (50yrs), $P 0.03$. Interruptions in function were noted in the following domains: Mobility for OA ($P= 0.033$) and RA ($P < 0.001$), Activities of daily living for RA ($P < 0.001$) and Jobs around the house for OA ($P= 0.039$) RA ($P < 0.001$) and lupus ($P= 0.006$). There were no significant associations when the mean “pain on average” was compared between those with or without the various self-reported arthritides. There was however a significant association when the average “pain at its worst” was examined in those who self-reported RA (8.9) vs. those who did not (7.8), $P= 0.005$.

Discussion

This study aimed to establish the prevalence of arthritis in Trinidad as well as to compare the Health-Related Quality of Life in patients with and without joint pain. Self-reported data serve as an invaluable resource in epidemiological studies and the Centres for Disease Control (CDC) recommends using self-reported, doctor-diagnosed arthritis as the case definition for estimating the prevalence of arthritis (14). The prevalence of self-reported joint pain was found to be almost 60% with half reporting joint swelling; figures in keeping with South American and other Caribbean countries’ prevalences (15).

In accordance with findings by the Centres for Disease Control (CDC) and Prevention (16), the prevalence was also higher in females than males and the average age of those reporting joint pain was significantly higher compared to those who did not. Our data revealed the prevalence of self-reported joint pain being more in Trinidadian women as opposed to men which can be due to reduced physical activity or muscle weakness. These findings are consistent with previous reports (17, 18). The knee joint was most commonly affected (63.4%). This can be explained by the age-associated increase in the incidence of knee OA as highlighted in The Framingham Osteoarthritis study (19). OA was the second most common self-reported arthritis in our study group.

The majority of persons interviewed attained up to primary or secondary level of education with only 15.2% acquiring tertiary level. Although reports have shown the prevalence of chronic pain to be inversely related to socio-economic status (20) the American Pain Society in 2017 reported that prevalence differences according to education were insignificant (21). It is important to note that in countries with generally easily accessible healthcare systems, educational background does not directly impact disease activity but patients with a higher educational level may have slightly less pain and less functional disability. This was explored in a study conducted in Sweden (22).

The level of education attained may be linked to unemployment (23). Notably, joint pain may have been a contributing factor to the inability to work. The impact of arthritis on unemployment has been highlighted by Mayo Clinic researchers (24). The majority of persons suffering with joint pain were in fact unemployed however this category did include persons who were retired. As it has already been established that the prevalence of joint pain increases with age (25), this too may have been a confounding factor that could explain the aforementioned associations.

Persons of East Indian descent reported experiencing more severe joint pains both “on average” and when the joint pain was “at its worst” as compared to persons of the ethnic group “Other” - which included multiracial, Caucasian, Chinese and other respondents. In a cross sectional study conducted in Malaysia it was found that knee pain was more prevalent in Indians than compared to Malays and Chinese (25). In our study persons of African descent reported less severe joint pain in both domains. In a 2010 study conducted by Bolen et al in the United States (26), it was found that Blacks and Hispanics were 1.8–1.9 times as likely to have severe joint pain as Whites, and MRO (Multi-Racial and Other) were 1.9 times as likely. Some reasons given for the disparities between severities of joint pain in ethnic groups were - access to healthcare and use of healthcare services as well as “cultural differences in understanding of survey questions”, willingness to report pain, “variations in patterns of medication use and self-management approaches to manage pain.” Although the ethnic groups compared were different, in our study, persons of African descent reported less severe joint pain than either ethnic group, contradicting the findings of Bolen et al.

A previous Trinidadian survey sought to investigate inequalities in health using the EQ-5D instrument. Pain and discomfort were found to be the dimension with the highest prevalence of reported problems with one fifth of the adult population surveyed reporting pain at any level (27). In this study older age,

female gender and lower educational level were also significant predictors of pain or discomfort (27). This may be explained by the higher burden of arthritis in older women as seen in this study.

Persons who self-reported joint pain experienced significantly greater difficulty with mobility, activities of daily life, social activities, general health perception, jobs around the house and mental function as compared to those who did not. Similarly, patients who were diagnosed with some form of arthritis suffered more in mobility, activities of daily life, jobs around the house and mental function. These findings are similar to those of other studies in which patients diagnosed with various forms of arthritis experienced an overall reduced quality of life compared to those who were not (28–32). In this study Chikungunya related arthritis attained the highest percentage (12%) of self-reported cases followed by OA and lupus. In December 2013, PAHO/WHO received confirmation of the first cases of autochthonous transmission of chikungunya in the Caribbean (33, 34). This may explain why it was the most common self-reported form of arthritis.

Several recommendations are proposed in light of these findings. Continuing education for clinicians on the latest and best practices for the diagnosis and screening of arthritis may help in earlier diagnosis and result in better health related quality of life. Physician education has been linked to improved management of arthritis (35). At the time of this study there were three practicing rheumatologists for a population of 1.3 million. A systematic review of the literature on workforce planning for rheumatologists suggested a conservative estimate of 0.7 per 100,000 or 9 rheumatologists for our population (36). There is clearly a need for training, hiring and retention of rheumatologists in the local setting.

Primary care physicians (PCPs) being on the front line need also to be aware of most recent guidelines. A toolkit specifically designed to update PCPs on latest rheumatology guidelines has been shown to be effective in improving PCP competence in diagnosis and management of common rheumatic conditions (37).

Education of the public about the treatment services available for arthritis such as rheumatology clinics would enable them to have a better standard of care. This can be done through media and social media. Structured patient education programs have been shown to be effective for rheumatic diseases (38).

The treatment services for arthritis should be increased to accommodate the national prevalence rate. Rheumatology clinics as well as other treatment services for arthritis and its co-morbidities should be available in each Regional Health Authority in Trinidad and quality standards for these outpatient clinics need to be adopted (39).

Ancillary services such as physiotherapy and rehabilitation services should also be strengthened as there is strong evidence supporting their role in managing arthritis (40). Provision of essential medications including steroid sparing drugs and biologic agents is also recommended. Lastly, responsive evaluative measures can be implemented to detect important changes in HRQOL during a period of time as a means to improve patient management.

Strengths of this study was it was the first national survey of its kind to measure joint pain, arthritis and related symptoms. It also adds to the QOL research done in the Trinidadian setting. A large representative sample from 16 based primary care institutions was used spanning all geographic areas of the island.

There were some limitations of this work. Recall bias was a limitation with the reporting of previous diagnosis of arthritis as well as with frequency and timing of joint pain. Recall bias may have influenced the prevalence of self-reported diagnoses as many persons may not have accurately reported their diagnosis. The data obtained was not verified with physician diagnosis from patient records and this serves as a limitation of this study. The cross-sectional design of this survey provided no causal evidence of a relationship between risk factors, joint symptoms and quality of life. Self-reporting was used to determine diagnosis of arthritis and specific conditions in this survey. Self-reporting has a primary limitation of inadequacy of other risk factor measures such as chronic diseases that affect HRQOL. Our data collection did not include other possible confounding factors such as body mass index, history of physical trauma or the menopausal status of women. This study did not incorporate lifestyle factors as a contributor to HRQOL. It is imperative to include the assessment of comorbidities and other lifestyle factors in future studies when assessing HRQOL outcomes.

Conclusions

In conclusion this study was the first to highlight that almost two-thirds of adult outpatients attending walk-in clinics in Trinidad, complained of recent joint pain of moderate severity, and this was associated with upset in all quality of life domains. While this study was based on self-reported symptoms and diagnosis, it was representative of an outpatient population in Trinidad, and its findings lend support to improving rheumatologic services in Trinidad. Several key evidence-based recommendations are proposed in this regard.

List Of Abbreviations

HRQOL - Health related quality of life

RHA- Regional Health Authority

Declarations

- Ethics approval and consent to participate

Participation in this study was voluntary and signed consent was obtained from all those providing feedback. The methods for this study were approved by the Research Ethics Committee (CEC114/01/16) of the University of the West Indies, St. Augustine, Trinidad. All ethical standards are comparable with the 1964 Helsinki declaration and its later amendments.

- Consent for publication

Not applicable

- Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

- Competing interests

The authors declare that they have no competing interests

- Funding

Not applicable

- Authors' contributions

All authors contributed toward data analysis, drafting and revising the paper and agree to be accountable for all aspects of the work.

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- Authors' information (optional)

Not applicable

Footnotes

Not applicable

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