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ORIGINAL ARTICLE

Association Between Sedentary Behaviour and Musculoskeletal Complaints among Roman Catholic Priests in Benin City, Edo State, Nigeria

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ABSTRACT

Background: The impact of sedentary behaviour (SB) on musculoskeletal complaints (MSK-C) among Roman Catholic priests is of utmost interest given that they largely reside and work within parish premises. This study evaluated the association between SB and MSK-C among Roman Catholic priests in Benin City.

Methods: A cross-sectional study involving 91 Roman Catholic priests recruited via consecutive sampling. Participants' age and anthropometric parameters were obtained. Also, MSK-C and SB were assessed using the Nordic Musculoskeletal Questionnaire and the International Sedentary Assessment Tool questionnaires, respectively. Descriptive statistics summarized the data. Pearson's correlation coefficient determined the relationship between SB and anthropometric parameters. Chi-square analysed the association between SB and MSK-C, while binary logistic regression analysed predictors of MSK-C at $p<0.05$.

Results: Respondents' mean age and sedentary time were 39.33±11.03 years and 353.34±166.29 minutes/day. Neck pain was the most prevalent MSK-C (45.1%), and ankle pain was the least (5.5 %). Significant associations ($p<0.05$) were found between SB and respondents' experience of pain in the neck, shoulder, wrist, upper back, low back (LBP), hip, knee, and ankle. A negative significant relationship ($p<0.05$) exists between respondents' age and SB, while age, weight, BMI, waist circumference (WC), and WC to height ratio (WHtR) significantly ($p<0.05$) predicted LBP.

Conclusion: Roman Catholic priests were sedentary for about a quarter of day time, and their SB was associated with the experience of pain at the neck, shoulder, wrist, back, hip, knee and ankle. Age of Roman Catholic priests influenced SB, while age, weight, BMI, WC, and WHtR predicted LBP.

Keywords: Sedentary behaviour; Musculoskeletal complaints; Roman Catholic priests; Benin City.

INTRODUCTION

The epidemiology of sedentary behaviour (SB) involves research into its distribution, determinants, and health consequences within the population.[1] Sedentary Behaviour Research Network defines SB as "any waking behaviour characterised by an energy expenditure of ≤1.5 METs while sitting or reclining ".[2] Decades of researches have seen increasing interest in exposures to SB.[3] More specifically, recent researches have focused on the prevalence of SB in sitting-related populations due to the transitioning of occupational setting from physically demanding roles to more sedentary occupations,[3] especially in the light of advances in technologies. In addition to sitting at work or in school, both adults and children are spending increasing amounts of sitting time during leisure activities and passive transport.[3]

There are numerous factors contributing to SB, such as age, gender, occupation, environmental factors, mental health, and chronic illness.[4-6] The prevalence of SB among adults and older adults is reported to be high, with 31% of adults and 80% of adolescents engaging in less than 30 minutes of moderate-intensity physical activity per day.[7] Among older adults, SB is associated with daily activities such as knitting, sewing, computer use, playing cards, watching television, and dining out with friends.[6] Being female is associated with total sitting, television and screen entertainment, and passive travel.[5] In the workplace, the main contributor to daily sedentary time for workers is conventional workplace sitting time.[8] Environmental variations and individual social situations influence SB.[4]

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Previous studies have demonstrated that long-term SB may lead to emotional and mental disorders in university students, adolescents, and senior citizens.[9,10] Additionally, depression, anxiety, and stress can contribute to SB.[10] Vancampfort and colleagues reported that among adults in low and middle income countries, SB was associated with multimorbidity, independent of light-intensity physical activity and adherence to moderate-to-vigorous physical activity guidelines.[11] Crucially, SB is a form of physical inactivity that has a negative impact on individuals health, including musculoskeletal complaints (MSK-C).[12]

Musculoskeletal complaints arise from a variety of conditions affecting joints, bones, muscles, and connective tissues.[13] These complaints include shoulder/neck pain, upper extremity pain, upper back pain, low back pain (LBP), and leg pain.[12] Typically, MSK-C arises from an inflammatory response resulting from tissue damage to musculoskeletal structures.[13] Additionally, musculoskeletal pain can induce a vicious pain cycle leading to decrease in activity, resulting in more pain and further disruption of the musculoskeletal system.[13] Musculoskeletal-related complaints are major issues in the workplace, with significant consequences such as physical problems, disability, and a heavy financial burden on the society.[14] Consequently, they are regarded as prominent health concerns in both developed and developing nations.[14] The World Health Organization has explained that musculoskeletal disorders are the leading contributor to years lived with disability (YLDs) worldwide, with around 149 million YLDs, accounting for 17% of all YLDs globally.[7,15] There is evidence to suggest that MSK-C are the leading cause of disability worldwide, with LBP being the single leading cause of disability in 160 countries.[16]

Furthermore, musculoskeletal conditions are typically characterised by persistent pain, with limitations in mobility, dexterity, and overall functioning, which reduces a person's ability to work.[13] Analysis of data from the Global Burden of Disease 2019 revealed that approximately 1.7 billion people globally live with musculoskeletal conditions.[16] In a semi-urban community in North-Central Nigeria, a point prevalence of 33% was found among 2,454 respondents.[17] This indicates that MSK-C is common across people of all cultures. Possible risk factors for MSK-C include repetitive strain injuries resulting from repetitive movements or overuse.[18] Other risk factors of MSK-C include poor posture, work-related physical demands such as bending, lifting, carrying, obesity or excess weight, genetic predisposition, individual factors, and SB.[12] Some of the risk factors for MSK-C have been associated with SB.[8,12] High sedentary times have been linked to harmful health effects, including premature all-cause mortality, overweight, obesity, cancer, and chronic conditions such as cardiovascular diseases, metabolic syndrome, type 2 diabetes, and lower back pain.[8]

Several studies have investigated the relationship between SB and musculoskeletal pain among adolescents and workers.[12,19,20] However, there are very few studies on SB and MSK-C among Roman Catholic priests.[21, 22] The impact of SB on MSK-C among Roman Catholic priests should be of utmost concern and interest, given that they are known to be parish residents and perform almost all religious and administrative duties within the parish premises.[23] Melo et al reported low physical activity among religious Catholics in Brazil.[21] Ojoawo and Mustapha reported a high prevalence of musculoskeletal pain among Christian and Muslim clergy, while Prajapati and Thakkar reported a medium prevalence of musculoskeletal pain among Hindu priests.[24,25] Thus, studies on the prevalence of MSK-C and SB among Roman Catholic priests are limited. Therefore, this study investigated the association between SB and MSK-C among Roman Catholic priests in Benin City, Nigeria.

METHODS

Study Design

This study utilised a cross-sectional design and consecutively recruited 91 Roman Catholic priests from various parishes in Benin City, Edo State, Nigeria. The Dean of the Chancery of Roman Catholic priests in Benin City provided the information as stated in the Diocesan Directory, 2023 that there are 132 Catholic Churches in Benin City served by 117 parish priests.

Participants

The inclusion criteria were Roman Catholic priests in active service, aged 18 years and above, who were willing to participate in the study. Roman Catholic priests were excluded from participation if they had less than one year of work experience or a history of surgery.

Sample Size Determination

The sample size was calculated using Slovin's formula n = N/(1+Ne^2),[26] where n= sample size, N= total population (117) (Diocesan Directory, 2023), e= margin of error (0.05). The minimum sample size for this study was n= 117/1+117 $(0.05)^2$ thus, n= 90.522, approximately 91 participants.

Sample Selection

All readily available Roman Catholic priests in Benin City were recruited for this study. One of the authors went to the Benin Chancery of the Catholic Church to find out the number of

Diocesan priests in Benin City and visited several Roman Catholic parishes including St. Albert's, St. Patrick's, Mary the Queen, Christ the King, St. Alphonsus', St. Paul's, St. Peter's, and St. Joseph's to recruit participants. Also, the Dean of the Chancery and the priests in residence visited by the author assisted in distributing questionnaires to other priests not visited by the author and returned the completed questionnaire to the author.

Ethical Considerations

Ethical approval was obtained from the Ministry of Health of Edo State, Nigeria. Following this, a letter of introduction was sent to the various parish priests explaining the aim and benefits of the study. After administrative permission was granted, one of the researchers was introduced to all priests in the various parishes who verbally consented to participate in the study and set a date for data collection.

Procedure for Data Collection

On the designated date, participants' age was obtained, and anthropometric parameters were measured and recorded. Questionnaires on SB and MSK-C were then distributed to the participants. The questionnaires were self-administered and took approximately 20 minutes to complete. The completed questionnaires were returned on the same day. The researcher remained available to provide clarification on any questions from participants and to take the required measurements.

Weight Measurement: A weighing scale (Camry) was used to measure the weight of the participants. The participants were politely instructed to remove their shoes and heavy clothing and stand on the weighing scale. The researcher observed and documented the values to the nearest 0.01Kg.

Height Measurement: A height meter (Healthometer) was used to measure the height of the participants. The participants were asked to remove their shoes and stand close to the height meter, looking straight ahead with their arms by their sides.[27] The apex of the height for each participant was read to the nearest 0.01m and recorded.

Calculation of Body Mass Index: The BMI of the participants was calculated as the ratio of weight to the square of height to the nearest 0.01Kg/m^2.

Waist Circumference Measurement: A tape measure was used to measure the waist circumference (WC) of the participants. The participants were asked to stand with their arms at their sides, feet positioned close together, and weight evenly distributed across both feet. With the tape snug around the body, but not so tight as to be constricting, the researcher placed the tape approximately at the midpoint between the lower margin of the last palpable rib and the top of the iliac crest.[27]

Hip Circumference Measurement: The tape measure was also used to measure the hip circumference (HC) of the participants. The participants were asked to stand with their arms at their sides, feet positioned close together, and weight evenly distributed across both feet. With the tape snug around the body, but not too tight as to be constricting, the researcher placed the tape around the widest portion of the buttocks.[27]

Calculation of the Waist Circumference to Height Ratio: The WC to height ratio (WHtR) was calculated by dividing the WC value by the height of the participants to the nearest two decimal points.

Measurement of Sedentary Behaviour: The International Sedentary Assessment Tool (ISAT) was used to assess the SB of participants. It consists of two parts, each comprising six items.[28] The first part assesses the time spent in specific sedentary activities on a typical weekday in the past week, such as watching TV, using a computer, reading, socialising, and commuting. The second part assesses the time spent in sedentary activities on a typical weekend day in the past week. Higher scores indicate greater SB.[28] The ISAT has been recommended for use in population health surveys based on the best available evidence.[28] It is comprehensible, acceptable, and simple to complete, with satisfactory internal consistency (α = 0.80), an intra-class correlation coefficient of 0.80, and criterion validity demonstrated (rho = 0.63), indicating its reliability and validity.[28] The daily SB of each participant was calculated by summing up the total time spent in SB on both weekdays and weekends and dividing the sum by 7. Additionally, SB was categorised as low SB for sedentary time less than 240 minutes/day, moderate SB for sedentary time of 240–359 minutes/day, high SB for sedentary time of 360–480 minutes/day, and very high SB for sedentary time greater than 480 minutes/day.[29]

Measurement of Musculoskeletal Complaints: The Nordic Musculoskeletal Questionnaire was used to assess the MSK-C of the participants. It was developed by Kuorinka in 1987 as an instrument for examining musculoskeletal symptoms within a given population and for occupational health services.[18] When used to assess pain within the past 7 days, the Nordic Musculoskeletal Questionnaire has a sensitivity ranging between 66% and 92% and a specificity ranging between 71% and 88%.[30] The Nordic Musculoskeletal Questionnaire demonstrates good reliability for assessing musculoskeletal symptoms, with a kappa coefficient ranging from 0.64 to 0.71 for pain in the past year and between 0.59 and 0.78

for pain in the past year that interferes with work or leisure.[30]

Data Analysis

The IBM SPSS version 27 was used for all statistical analyses. The normality of the data was checked using the Kolmogorov-Smirnov test. Descriptive statistics of mean, standard deviation, frequency, and percentages were used to summarise the data. Chi-square test was used to analyse the association between SB and MSK-C. The Pearson product-moment correlation coefficient was used to determine the relationship between SB and anthropometric parameters. To identify the predictors of participants' most likely experienced MSK-C, a binary logistic regression was conducted using SB and anthropometric scores as predictor variables. The level of significance was set at $p < 0.05$.

RESULTS

A response rate of 100% was obtained as all participants completed their questionnaires. The collected data were normally distributed. The mean age, weight, height, BMI, WC, HC and WHtR of the respondents were 39.33±11.03 years, 74.34±8.67Kg, 1.72±0.09m, 25.28±4.14Kg/m^2, 0.86± 0.07m, 1.03± 0.07m and 0.50± 0.05m, respectively (Table 1).

The total sedentary time of the respondents was 353.34± 166.29 (Table 1). The prevalence of neck pain, shoulder pain, elbow pain, wrist pain, upper back pain, LBP, hip pain, knee pain, ankle pain among the respondents were 45.1%, 22.0%, 12.1%, 39.6%, 27.5%, 23.1%, 8.8% and 5.5%, respectively (Table 2).

There was a significant negative relationship between age and SB among participants (r= -0.248, p=0.018) (Table 3). No significant relationship was observed between each of weight (p=0.689), height (p=0.098), BMI (p=0.377), WC (p=0.086), HC (p=0.150), WHtR (p=0.277) and SB among participants (Table 3).

There was a significant association between SB and the experience of neck pain (X^2=26.123, p=<0.001), shoulder pain (X^2=17.930, p=<0.001), wrist pain (X^2=15.382, p=0.002), upper back pain (X^2=16.659, p=<0.001) lower back pain (X^2=10.864, p=0.012), hip pain (X^2=8.606, p=0.035), knee pain (X^2=24.486, p=<0.001), and ankle pain (X^2=8.752, p=0.033) among respondents (Table 4).

The findings of the binary regression analysis revealed that respondents were unlikely to experience neck pain because the probability of respondents experiencing neck pain was lesser than the probability of them not experiencing neck pain with decrease in the predictors of age (B=-1.94), weight (B=-87.56), HC (B=-17.47), and SB (B=-0.01), although this was not statistically significant (p<0.05), whereas respondents were not significantly (p>0.05) likely to experience neck pain because the probability experiencing neck pain was greater than the probability of not experiencing neck pain with increase in predictors of BMI (B=251.79) and WC (B=7.43) (Table 5). Also, respondents were unlikely to experience neck pain because the probability of experiencing neck pain was lesser than the probability of not experiencing neck pain with increase in predictors of height (B=7193.49) and WHtR (B=785.37), also, this was not statistically significant (p<0.05) (Table 5).

Similarly, respondents were unlikely to experience shoulder pain because the probability of experiencing shoulder pain was lesser than the probability of not experiencing shoulder pain with decrease in the predictors of weight (B=-4.46), WC (B=-14.40), HC (B=-5.22), and SB (B=-0.03), although this was not statistically significant (p<0.05) (Table 5). On the other hand, respondents were not significantly (p>0.05) likely to experience shoulder pain because the probability of experiencing shoulder pain was greater than the probability of not experiencing shoulder pain with increase in the predictors of age (B=3.45), height (B=655.64), BMI (B=(13.63), and WHtR (B=1526.98) (Table 5).

Respondents were unlikely but statistically not significant (p>0.05) to experience upper back pain because the probability of experiencing upper back pain is lesser than the probability of not experiencing upper back pain with decrease in the predictors of age (B=-2.10), weight (B=-77.50), HC (B=-16.95), and SB (B=-0.01); whereas respondents were not significantly (p>0.05) likely to experience upper back pain because the probability of experiencing upper back pain is greater than the probability of not experiencing upper back pain with increase in the predictors of BMI (B=209.31) and WC (B=10.20) (Table 5).

Furthermore, the findings of the regression analysis revealed that the respondents were significantly (p<0.05) likely to experience LBP because the probability of them experiencing LBP was greater than the probability of not experiencing LBP with increase in the predictors of age (B=0.43, ODD ratio=1.54, p=0.000), weight (B=4.14, ODD ratio=62.80, p=0.004) and WHtR (B=688.99, ODD ratio=1.67E+299, p=0.049). Conversely, respondents were significantly (p<0.05) unlikely to experience LBP with decrease in the predictors of BMI (B=-9.6, ODD ratio=0.00, p=0.008), WC (B=-4.45, ODD ratio=0.01, p=0.032) and HC (B=-1.36, ODD ratio=0.26, p=0.038) because the probability of respondents experiencing LBP was lesser than the probability of not experiencing LBP (Table 5).

Table 1: Socio-demographic, anthropometric parameters and sedentary time of the respondents

Variable	Mean±SD	Minimum	Maximum
Age (years)	39.33±11.03	26.00	61.00
Weight (Kg)	74.34±8.67	59.00	90.00
Height (m)	1.72±0.09	1.54	1.96
BMI (Kg/m^2)	25.28±4.14	19.00	34.20
Waist circumference (m)	0.86±0.07	0.99	0.76
Hip circumference (m)	1.03±0.07	0.91	1.17
Waist-to-height ratio	0.50±0.05	0.44	0.65
Total sedentary time (min/day)	353.34±166.29	155.71	797.86
Total sedentary time (min/week)	2473.41±1164.07	1090.00	5585.00

(n=91) BMI= Body Mass Index

Table 2: Prevalence of musculoskeletal complaints among Respondents

Variable	Frequency (n=91)	Percent
Neck pain		
No	50	54.90
Yes	41	45.10
Shoulder pain		
No	71	78.00
Yes	20	22.00
Elbow pain		
No	80	87.90
Yes	11	12.10
Wrist pain		
No	80	87.90
Yes	11	12.10
Upper back pain		
No	55	60.40
Yes	36	39.60
Lower back pain		
No	66	72.50
Yes	25	27.50
Hip pain		
No	70	76.90
Yes	21	23.10
Knee pain		
No	83	91.20
Yes	8	8.80
Ankle pain		
No	86	94.50
Yes	5	5.50

Table 3: Relationship between sedentary behaviour and variables of age and anthropometric parameters

Variables	r	p-value
Age * sedentary behaviour	-0.248	0.018 ***
Weight * sedentary behaviour	-0.043	0.689
Height * sedentary behaviour	0.174	0.098
BMI * sedentary behaviour	- 0.094	0.377
Waist circumference * sedentary behaviour	- 0.181	0.086
Hip circumference * sedentary behaviour	- 0.152	0.150
Waist-to-height ratio * sedentary behaviour	0.115	0.277

BMI=Body Mass Index ***Significant relationship.

Additionally, but not significantly (p>0.05), the probability of respondents experiencing LBP was equal to the probability of them not experiencing LBP with increase in the predictor of SB (B=0.00, ODD ratio=1), whereas the probability of respondents experiencing LBP was lesser than the probability of not experiencing LBP with decrease in the predictor of height (B=.-95.27, ODD ratio=0.00) (Table 5).

Respondents were unlikely but statistically not significantly (p>0.05) to experience hip pain because the probability of experiencing hip pain is lesser than the probability of not experiencing hip pain with decrease in the predictors of weight (B=-1.51), WC (B=-11.64), HC (B=-6.18),

Table 4: Association between respondents' sedentary behaviour and the experience of musculoskeletal complaints

Variable	Low SB	Moderate SB	High SB	Very high SB	X^2	p-value
Neck pain						
No	9	16	16	15	26.123	<0.001
Yes	26	0	0	9		
Shoulder pain						
No	20	16	16	19	17.930	<0.001
Yes	15	0	0	5		
Elbow pain						
No	29	16	15	20	4.028	0.258
Yes	6	0	1	4		
Wrist pain						
No	30	10	16	24	15.382	0.002
Yes	5	6	0	0		
Upper back pain						
No	14	16	10	15	16.659	<0.001
Yes	21	0	6	9		
Lower back pain						
No	20	16	11	19	10.864	0.012
Yes	15	0	5	5		
Hip pain						
No	24	16	10	20	8.606	0.035
Yes	11	0	6	4		
Knee pain						
No	35	16	16	16	24.486	<0.001
Yes	0	0	0	8		
Ankle pain						
No	35	16	15	20	8.752	0.033
Yes	0	0	1	24		

SB - Sedentary Behaviour

and SB (B=-0.02); whereas respondents were statistically not significantly (p>0.05) likely to experience hip pain because the probability of experiencing hip pain is greater than the probability of not experiencing hip pain with increase in the predictors of age (B=1.45) and BMI (B=2.97) (Table 5).

DISCUSSION

This study revealed a mean age of 39 years for respondents with the minimum age of 26 years and maximum age of 61, suggesting that the Roman Catholic priests in this sampled population are middle-aged adults. This is consistent with the findings of a survey conducted in the United States by Georgetown University that the average age of priests since 1999 has been in the mid-thirties.[31] Additionally, the respondents in this present study were found to be overweight, which corroborated the findings that the participants reported high sedentary time, a sequela of low physical activity. This is consistent with the findings of a previous study, which indicated that overweight is associated with individuals who have lower levels of physical activity.[32] However, the findings of this present study revealed that respondents' WHtR did not exceed the recommended threshold of 0.5, indicating a lower health risk. Although the literature on the comparative WHtR values among Roman Catholic priests is limited, the global prevalence of abdominal obesity in sedentary professions is high.[29]

Also, the mean sedentary time reported among the respondents of this study implies that the respondents are sedentary for about a quarter time of the day. This sedentary time of 353 minutes/day reported in this study is lower than the 520 minutes/day observed in another population of office workers in Singapore,[33] but comparable to that of Bartosiewicz et al among Polish nurses.[34] Bartosiewicz et al reported a sedentary time of 337 minutes/day which was different from the sedentary time obtained in this present study among Roman Catholic priests. These disparities may stem from differences in occupational demands, cultural lifestyles, and the availability of physical activity opportunities. For instance, the structured routines of clergies may limit opportunities for movement, contributing to their higher sedentary time.[23] Moreover, the lack of structured physical activity programmes targeting clergy members may exacerbate SB.[21, 22] Unlike professions that integrate wellness programmes into daily routines, clergy roles often prioritise spiritual and administrative duties over physical well-being.[2] This highlights the need for innovative strategies to incorporate movement and exercise into the demanding schedules of religious professionals.

Table 5: Regression analysis of respondents' experience of musculoskeletal complaints using sedentary behaviour and anthropometric scores as predictor variables

Variables	B	p-value	ODD ratio	95% CI for EXP(B)	
				Lower	Upper
Neck pain					
Age	1.94	1.000	0.14	0.00	-
Weight	-87.56	0.990	0.00	0.00	-
Height	7193.49	0.998	0.00	0.00	-
BMI	251.79	0.996	2.23E+109	0.00	-
WC	7.43	1.000	1683.81	0.00	-
HC	-17.47	0.999	0.00	0.00	-
WHtR	785.37	0.999	0.00	0.00	-
SB	-0.01	1.000	0.997	0.00	6.47E+18
Shoulder pain					
Age	3.45	0.993	31.36	0.00	-
Weight	-4.46	0.999	0.01	0.00	-
Height	655.64	0.999	5.52E+284	0.00	-
BMI	13.63	0.999	834233.59	0.00	-
WC	-14.40	0.998	0.00	0.00	-
HC	-5.22	0.998	0.01	0.00	-
WHtR	1526.98	0.999	-	0.00	-
SB	-0.03	0.998	0.97	0.00	5672031995
Upper back pain					
Age	-2.10	1.000	0.12	0.00	-
Weight	-77.50	0.997	0.00	0.00	-
Height	6010.02	0.999	-	0.00	-
BMI	209.31	0.999	8.02E+90	0.00	-
WC	10.20	1.000	26853.81	0.00	-
HC	-16.95	1.000	0.00	0.00	-
WHtR	1039.69	1.000	-	0.00	-
SB	-0.01	1.000	0.997	0.00	6.72E+42
Low back pain					
Age	0.43	0.000***	1.54	1.22	1.94
Weight	4.14	0.004***	62.80	3.82	1031.25
Height	-95.27	0.31	0.00	0.00	2.32E+38
BMI	-9.60	0.008***	0.00	0.00	0.08
WC	-4.45	0.032***	0.01	0.00	0.68
HC	-1.36	0.038***	0.26	0.07	0.93
WHtR	688.99	0.049***	1.67E+299	38.30	-
SB	0.00	0.900	1.000	0.99	1.00
Hip pain					
Age	1.45	0.999	4.27	0.00	-
Weight	-1.51	1.000	0.22	0.00	-
Height	725.76	0.999	-	0.00	-
BMI	2.97	1.000	19.54	0.00	-
WC	-11.64	0.997	0.00	0.00	-
HC	-6.18	0.999	0.00	0.00	-
WHtR	1363.98	0.997	-	0.00	-
SB	-0.02	0.999	0.99	0.00	2685617415

B=Regression coefficient, BMI=Body Mass Index, WC=Waist Circumference, HC=Hip Circumference, WHtR=Waist-to-Height ratio, ***= Significant relationship

The prevalence of MSK-C among the respondents in this study highlights significant health concerns. Respondents reported experiencing neck pain, shoulder pain, upper back pain, LBP and hip pain. This finding is consistent with reports of similar studies among professionals with low sedentary time.[12, 35] The similarities underscore the role of prolonged sitting in contributing to MSK-C across diverse professional roles. However, specific factors, such as ergonomic conditions and postural habits, may exacerbate the issue in particular groups, such as Roman Catholic priests, who often engage in extended periods of static postures during counselling work and prayers.[21,23] Additional factors, such as inadequate ergonomic furniture in offices and residences, may also contribute to the increased prevalence of MSK-C. The absence of proper seating support and adjustable desks could lead to poor posture, further straining musculoskeletal structures.[36] Addressing these environmental contributors could significantly reduce the burden of MSK-C among this population. Regular physiotherapy assessments and ergonomic interventions could alleviate these complaints.

The association between SB and MSK-C was significant, particularly for neck pain, shoulder pain, upper back pain, LBP, hip pain, knee pain and ankle pain. Similar patterns were observed in global studies.[37,38] Alhakami et al in Saudi Arabia reported significant correlations between prolonged sitting and neck pain among professionals.[37] However, differences in prevalence rates may be attributed to varying ergonomic practices and access to workplace interventions. The Roman Catholic priests in this study may face unique occupational challenges traditionally associated with priestly duties such as prolonged periods of static posture during sermons and prayer, which exacerbate musculoskeletal strain. Additionally, the interplay between SB and psychosocial factors like stress and workload may amplify MSK-C. Wyns and colleagues opined that mental stress can increase muscle tension, worsening discomfort and pain.[39] This multifactorial relationship highlights the need for holistic interventions that address both the physical and psychological aspects of health among sedentary populations. The prevalence of neck, shoulder and LBP coupled with the SB among respondents in this study underscores the need for targeted interventions. These could include ergonomic training, the incorporation of regular physical activity, and education on postural health to mitigate the adverse effects of prolonged sitting. Furthermore, periodic assessments of musculoskeletal health and SB could help identify at-risk individuals and implement timely interventions.

However, the binary logistic regression analysis for MSK-C of this study revealed varied significant influences of respondents' anthropometric parameters and SB. Respondents were likely to experience LBP with increase in the predictors of age, weight and WHtR. This is consistent with report of Frilander and colleagues that WHtR is associated with experience of LBP.[40] Also, this corroborates the report of Xie et al that age is associated with increased risk of experiencing LBP.[41] While this present study found the likelihood of experiencing LBP to be associated with WHtR (a measure of WC and height), Xie et al found the likelihood of experiencing LBP to be associated with body shape index (a measure of WC, height, and weight). These findings suggest a multifactorial relationship between variables of age, height, weight, WC and musculoskeletal health, where some variables may serve as protective factors, while others pose risks. Additionally, the lack of a significant association between SB and most anthropometric parameters suggests that prolonged sitting may independently contribute to MSK-C. This underscores the importance of reducing sedentary time irrespective of body composition. Strategies such as promoting standing desks or incorporating brief physical activity breaks could prove beneficial.

Conclusion

Roman Catholic priests are sedentary for about a quarter of the day's time, and their SB is associated with the experience of musculoskeletal pain at the neck, shoulder, wrist, back, hip, knee and ankle. While age of Roman Catholic priests influences SB, variables of age, weight, and WHtR are predictors for the experience of LBP. Sedentariness is independent of anthropometric indicators of height, weight, BMI, WC and WHtR.

Recommendations and clinical implication

This study recommends the promotion of physical activity through the establishment of structured programmes tailored to the lifestyle of priests. Regular breaks for light exercises during prolonged sitting periods should be encouraged. Additionally, providing ergonomic seating arrangements and promoting proper posture can help mitigate musculoskeletal strain. Seminars and workshops on the risks of sedentary behaviour and strategies to increase daily physical activity should be organised for priests. Routine musculoskeletal health assessments can assist in identifying and addressing issues at an early stage.

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