

A Descriptive Cross-Sectional Study to Assess the Prevalence and Risk Factors for Musculoskeletal Complaints among Nursing Students in A Selected College at Virudhunagar District.

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Abstract-- The project is “A Descriptive cross-sectional study to assess the prevalence and risk factors for musculoskeletal complaints among nursing students in a selected college at Virudhunagar district”. It is conducted in V.V.Vanniaperumal nursing college for women at Virudhunagar district.

The objectives of the study are:

- To determine the prevalence of various musculoskeletal complaints among nursing students.
- To find out the risk factors for musculoskeletal complaints among nursing students
- To associate the prevalence and risk factors of musculoskeletal complaints with selected demographic variables among nursing students.

The following hypothesis are tested at 0.05 level of significance:

Hypothesis:

- H₁-There will be a significant association between prevalence and risk factors for musculoskeletal complaints and selected demographic variables.

Research findings were:

The present study was undertaken to find the prevalence and risk factors for musculoskeletal complaints among nursing students in a selected college at Virudhunagar district. Non-experimental cross sectional research design was adopted; Nonprobability convenient sampling technique was used to select samples. The data was collected, organized, tabulated and analysed using both descriptive and inferential statistics. It was found among 100 samples, that majority of the samples 73% reported lower back pain, 59% of samples had experienced pain in 3-6 body regions and 89% of the students had more than 6 risk factors

Keywords-- Prevalence, Risk factors, Musculoskeletal complaints, Nursing students.

I. INTRODUCTION

Musculoskeletal complaints are increasingly recognized as a significant physical health concern within the healthcare sector. Although much of the existing students are also highly vulnerable to develop these conditions. During clinical training, students frequently engage in physically demanding tasks such as patient lifting, repositioning, prolonged standing and repetitive movements often without fully developed ergonomic skills or adequate physical conditioning. As a result, many experience early onset of pain or discomfort in various body parts such as neck, shoulder, lower back, upper limbs.

Healthcare professionals especially nurses, are at risk of musculoskeletal complaints as they are involved in the bedside care giving process. A study conducted among health professionals from different clinical departments in a hospital reports, that working in the same position for a prolonged time and handling patients while shifting were the reason for work-related musculoskeletal pain is a significant and growing global public health concern, particularly among young adults. Musculoskeletal complaints, commonly leading to chronic pain, discomfort or functional impairment can result from any injury or trauma to the musculoskeletal structure (bones, joints, or soft tissue) and can be diagnosed clinically or reported by individuals. Musculoskeletal complaints can reduce an individual's quality of life, physical function and academic performance particularly among university students.

In the literature, studies conducted among nursing college students have reported varying prevalence rates of musculoskeletal complaints with different levels of severity. For instance, the prevalence of musculoskeletal pain has been reported as 44% for neck pain, 48% for shoulder pain and 57% for lower back pain.

Musculoskeletal conditions affect not only professional nurses but nursing students too. Long standing pain affecting young individuals in their protective years can impact their work efficiency and can have economic impacts. Effective interventions to decrease the effect of musculoskeletal complaints. A professional nursing force which forms the backbone of the health musculoskeletal disorders affect a significance proportion of individuals from different segments of the society, especially those whose work require a significant amount of both physical and psychological efforts.

The prevalence of musculoskeletal complaints among nursing students are reported to be high and these complaints can negatively affect academic performance, clinical efficiency and long-term career sustainability. Furthermore, early musculoskeletal complaints during training may progress into chronic disorder. When the student nurses enter the work force, it contributes to burn out, absenteeism and decreased productivity in the health care system.

II. RESEARCH METHODOLOGY

Aquantitative research approach with a non-experimental descriptive cross-sectional research design was adopted for the present study to assess the prevalence and risk factors for musculoskeletal complaints among nursing students. The study was conducted at V.V. Vanniaperumal Nursing College for Women, Virudhunagar, which is affiliated with The Tamil Nadu Dr. M.G.R. Medical University and recognized by the Indian Nursing Council (INC), New Delhi, and the Tamil Nadu Nurses and Midwives Council (TNNMC), Chennai. Nearly 200 students are studying in the college, which is situated approximately 5 km from Virudhunagar near Sri Vidhya Arts and Science College. The population of the study consisted of B.Sc. Nursing students studying in the selected college, while the sample comprised B.Sc. Nursing students from the selected years and VII semester who met the inclusion criteria. A sample size of 100 B.Sc. Nursing students was selected using a non-probability convenience sampling technique. Students who were willing to participate in the study were included. The study variable was the prevalence and risk factors for musculoskeletal complaints among nursing students, while the demographic variables included age, year of study, height, weight, body mass index (BMI), clinical hours per day, and study hours per day

Table-I: Distribution Of Samples Based On Demographic Variables

n =100

S.N O	DEMOGRAPHIC VARIABLES	FREQUENCY	PERCENTAGE
1.	Age in years 20 years 21 years 22 years 23 years	17 50 32 1	17% 50% 32% 1%
2.	Year of study Final year VII Semester	50 50	50% 50%
3.	Body mass index Under weight Normal Overweight	17 75 8	17% 75% 8%
4.	Clinical hours per day 6 - 8 hours > 8 hours	59 41	59% 41%
5.	Study hours per day 1 -3 hours 4-6 hours > 6 hours	39 34 27	39% 34% 27%

Table-I shows;

Half of the samples (50%) were in the age group of 21 years; 32% of the samples were in the age group of 22 years ;17% of the samples were in the age group of 20 years & only 1% of the sample in the age of 23 years.

50% of the samples were studying in the final year & VII semester respectively.

Majority of the samples (75%) had normal BMI, 17% had underweight and 8% of the samples were found to be overweight.

More than half of the samples (59%) were spending 6-8 hours of clinical per day. Only 41% of the samples were spending > 8 hours of clinical per day.

Most of the samples (39%) study between 1-3 hours per day and 34% of samples studying

4-6 hours per day. 27% of the samples were studying > 6 hours per day.

Distribution Of Samples Based On Demographic Variables

n =100

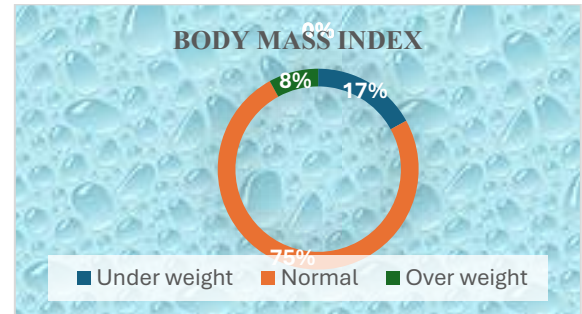


FIGURE 3: DISTRIBUTION OF SAMPLES BASED ON BODY MASS INDEX

n = 100

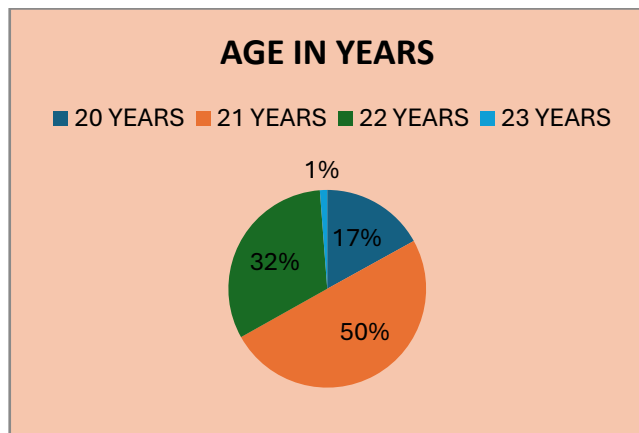


FIGURE1: DISTRIBUTION OF SAMPLES BASED ON AGE

n =100

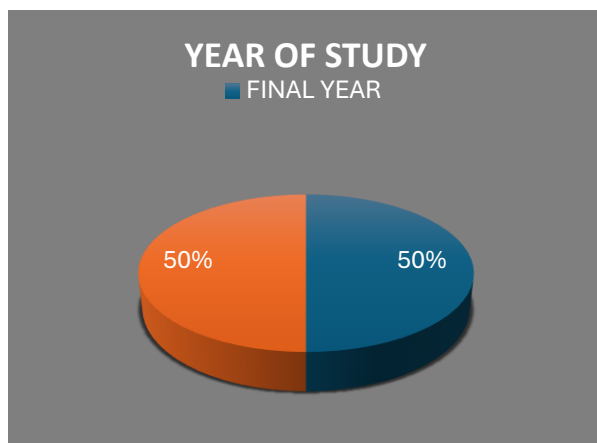


FIGURE 2: DISTRIBUTION OF SAMPLES BASED ON YEAR OF STUDY

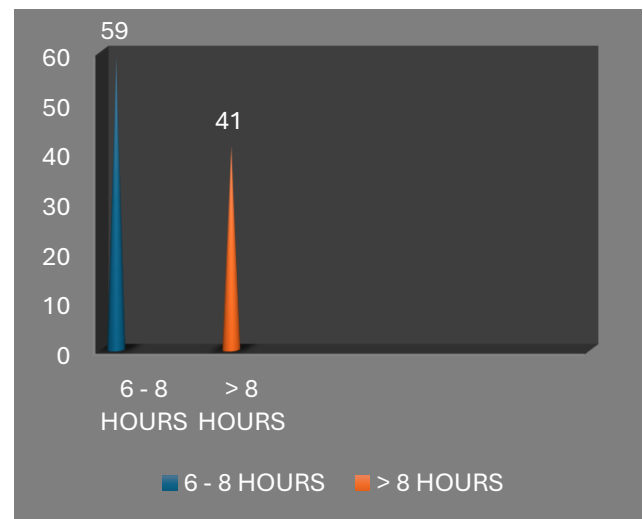


FIGURE 4: DISTRIBUTION OF SAMPLES BASED ON CLINICAL HOURS PER DAY

n =100

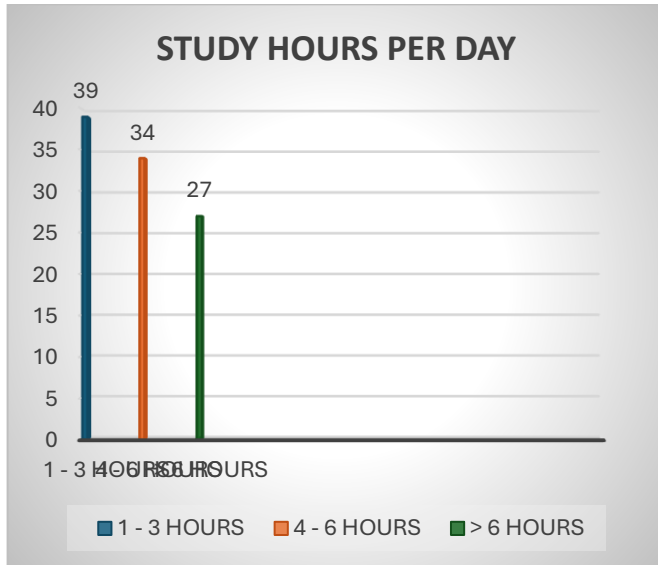


FIGURE 5: DISTRIBUTION OF SAMPLES BASED ON STUDY HOURS PER DAY

SECTION - B

TABLE – II: DISTRIBUTION OF SAMPLES BASED ON PREVALENCE OF MUSCULOSKELETAL COMPLAINTS [SELF REPORT ON EXPERIENCE OF PAIN OR DISCOMFORT IN VARIOUS BODY REGIONS]

n =100

S. N O	BOD Y REGI ONS	YES		NO	
		FREQU ENCY	PERCE NTAGE (%)	FREQU ENCY	PERCE NTAGE (%)
1.	Neck	53	53%	47	47%
2.	Shoul der	53	53%	47	47%
3.	Upper back	46	46%	54	54%

4.	Low e r back	73	73%	27	27%
5.	Elbo w	30	30%	70	70%
6.	Wrist/ Hand	29	29%	71	71%
7.	Hip/T high	51	51%	49	49%
8.	Knee	65	65%	35	35%
9.	Ankle /Foot	64	64%	36	36%

Table –II shows;

Most of the samples 73% reported lower back pain, 65% of samples reported knee pain, 64% reported ankle /foot pain, 53 % of sample had reported shoulder pain and neck pain.

Almost half of the samples 51% experienced pain on hip/thigh region, 46 % of the samples reported upper back pain.

While 30% and 29 % of the samples experienced pain on elbow and wrist /hand respectively which is comparatively lower than other body regions.

Overall, the findings indicate that musculoskeletal complaints are most common in the lower back, knee and ankle /foot regions among the samples, while elbow and wrist /hand complaints were less frequently reported.

n =100

TABLE-III: DISTRIBUTION OF SAMPLES BASED ON PREVALENCE OF MUSCULOSKELETAL COMPLAINT

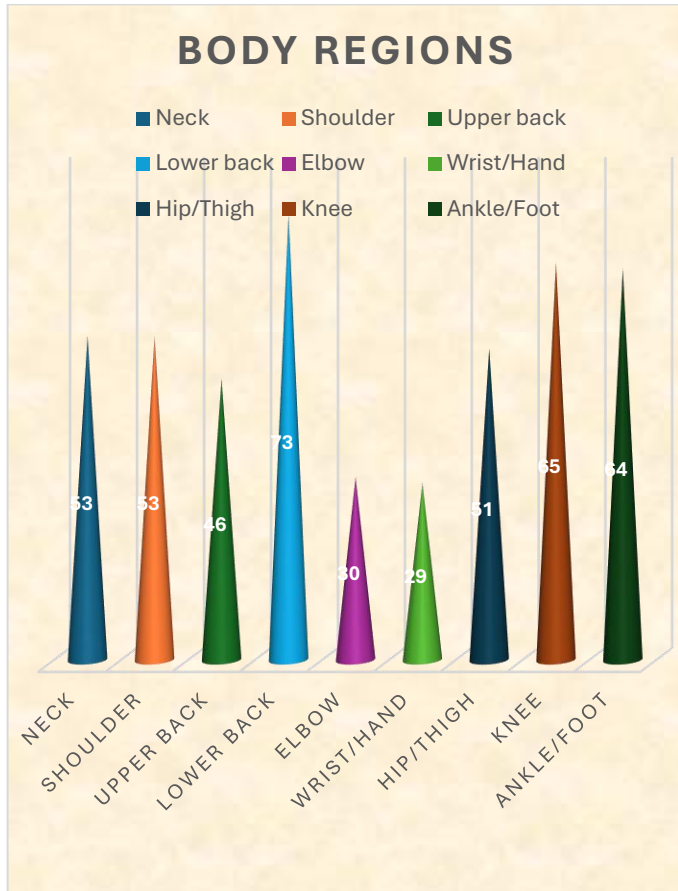


FIGURE: 6 DISTRIBUTION OF SAMPLES BASED ON PREVALENCE OF MUSCULOSKELETAL COMPLAINTS IN VARIOUS BODY REGIONS [SELF REPORT ON EXPERIENCE OF PAIN OR DISCOMFORT IN VARIOUS BODY REGIONS]

S.NO	PREVALENCE OF MUSCULOSKELETAL COMPLAINTS	FREQUENCY	PERCENTAGE
1.	0 Prevalence	4	4%
2.	< 3 Body regions	17	17%
3.	3-6 Body regions	59	59%
4.	> 6 Body regions	20	20%

Table-III shows;

Most of the samples (59%) had experienced pain in 3-6 body regions.

20% of the samples had experienced pain in > 6 body regions and only 17% of the samples found to have pain in < 3 body regions.

Very few samples 4% had no prevalence of musculoskeletal complaints.

n = 100

Table –IV shows;

Most of the samples (89%) had more than 6 risk factors for developing musculoskeletal complaints.

11% of the samples had 3-6 risk factors for musculoskeletal complaints and none of the samples had 0 risk factors and < 3 risk factors.

n = 100

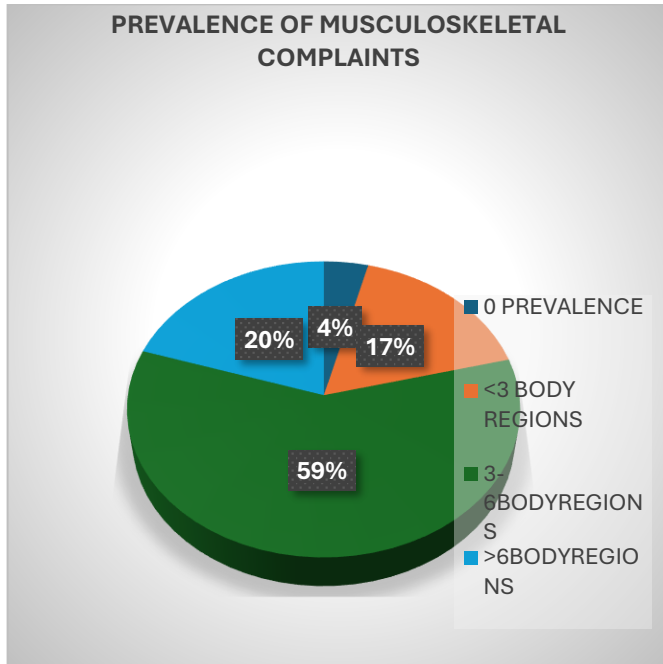


FIGURE 7: DISTRIBUTION OF SAMPLES BASED ON PREVALENCE OF MUSCULOSKELETAL COMPLAINTS

TABLE –IV: DISTRIBUTION OF SAMPLES BASED ON RISK FACTORS FOR MUSCULOSKELETAL COMPLAINTS

n = 100



FIGURE 8: DISTRIBUTION OF SAMPLES BASED ON RISK FACTORS FORMUSCULOSKELETAL COMPLAINTS

S.NO	RISK FACTORS FOR MUSCULOSKELETAL COMPLAINTS	FREQUENCY	PERCENTAGE
1	0 Risk factors	0	0%
2	< 3Risk factors	0	0%
3	3-6 Risk factors	11	11%
4	> 6 Risk factors	89	89%

TABLE -V: ASSOCIATION BETWEEN THE PREVALENCE OF MUSCULOSKELETAL COMPLAINTS WITH SELECTED DEMOGRAPHIC VARIABLES

n = 100

S.NO	DEMOGRAPHIC VARIABLES	FREQUENCY	PREVALENCE		CHI – SQUARE	P VALUE	DEGREE OF FREEDOM
			YES	NO			
1.	Age in years:						
	20 years	17	16	1	0.262 #	7.82	3
	21 years	50	48	2			
	22 years	32	31	1			
	23 years	1	1	0			
2.	Year of study:						
	Final year	50	49	1	0.260 #	3.84	1
	VII Semester	50	47	3			
3.	Body mass index:						
	Underweight				0.490 #	5.99	2
	Normal	17	16	1			
	Overweight	75	72	3			
		8	8	0			
4.	Clinical hours per day:						
	6 – 8 hours	59	55	4	2.71 #	3.84	1
	> 8 hours	41	41	0			
5.	Study hours per day						
	1-3 hours	39	38	1	0.863 #	5.99	2
	4-6 hours	34	32	2			
	>6 hours	27	26	1			

#- NON SIGNIFICANT

TABLE -V shows;

There is no significant association found between the prevalence of musculoskeletal complaints among nursing students and selected demographic variables such as age (0.262), Year of study (0.260), Body mass index (0.490), clinical hours per day (2.71), study hours per day (0.863).

TABLE-VI: ASSOCIATION BETWEEN THE RISK FACTORS FOR MUSCULOSKELETAL COMPLAINTS WITH SELECTED DEMOGRAPHIC VARIABLES

n=100

S.NO	DEMOGRAPHIC VARIABLES	FREQUENCY	RISK FACTORS FOR MUSCULOSKELETAL COMPLAINTS		CHI-SQUARE	P VALUE	DEGREE OF FREEDOM
			3-6 RISK FACTOR	>6 RISK FACTOR			
1.	Age in years						
	20 years	17	2	15	0.62 #	7.82	3
	21 years	50	5	45			
	22 years	32	4	28			
	23 years	1	0	1			
2.	Year of study						
	Final year	50	4	46	0.93 #	3.84	1
	VII Semester	50	7	43			
3.	Body mass index						
	Underweight				0.79 #	5.99	2
	Normal	17	2	15			
	Overweight	75	9	66			
		8	0	8			
4.	Clinical hours per day						
	6 - 8 hours	59	4	55	2.62 #	3.84	1
	> 8 hours	41	7	34			
5.	Study hours per day						
	1-3 hours				0.586 #	5.99	2
	4-6 hours	39	4	35			
	>6 hours	34	3	31			
		27	4	23			

- NON SIGNIFICANT

TABLE-VI Shows;

There is no significant association found between the risk factors for musculoskeletal complaints among nursing students and selected demographic variables such as Age (0.62), Year of study (0.93), Body mass index (0.79), Clinical hours per day (2.62), Study hours per day (0.586).

III. DISCUSSION

Introduction:

This study was conducted to identify the prevalence and risk factors for musculoskeletal complaints among nursing students in V.V.Vanniaperumal Nursing college for women at Virudhunagar. The results of the study were discussed based on objectives specified in this study.

Discussion Of The Study:

1. The present study highlights the high prevalence of musculoskeletal complaints among nursing students at V.V.Vanniaperumal Nursing College for Women, Virudhunagar. The findings revealed that lower back pain was the most commonly reported complaint (73%), followed by knee pain (65%) and ankle or foot pain (64%). More than half of the students also experienced shoulder and neck pain (53%), while hip or thigh pain was reported by 51% of the participants. Upper back pain affected 46% of the students. In contrast, relatively fewer students reported pain in the elbow (30%) and wrist or hand (29%), indicating that these regions were less commonly affected.

These findings are consistent with the study conducted by Pratiksha Rajpurohit, Pragna Landge, and Jahanvi Kayasth (2023) at KPGU University, Vadodara, India. Their cross-sectional study, which used a self-administered questionnaire among undergraduate nursing students, reported a 60% overall prevalence of work-related musculoskeletal disorders. Similar to the present study, lower back pain was identified as the most common site (46%), followed by ankle/foot pain (17%), neck pain (12%), and shoulder pain (10%).

The comparison indicates that musculoskeletal disorders are highly prevalent among nursing students in both settings, with lower back pain consistently emerging as the most affected region. This may be attributed to prolonged standing, improper posture, and physically demanding clinical activities during training. Although the overall prevalence and distribution vary slightly between studies, both findings emphasize the need for early preventive measures, ergonomic education, and regular physical activity to reduce the burden of musculoskeletal complaints among nursing students.

2. The present study assessed the distribution of risk factors associated with musculoskeletal complaints among the study population. The findings revealed that a large majority of participants (89%) had more than six risk factors, while 11% had between three to six risk factors. Notably, none of the participants reported having no risk factors.

This indicates a high cumulative exposure to risk factors, suggesting that the study population is at considerable risk for developing musculoskeletal complaints.

These findings are consistent with the study conducted by Prateek Behera and colleagues at All India Institute of Medical Sciences Bhopal in 2023. Their cross-sectional survey among undergraduate nursing students reported that more than 50% of participants experienced musculoskeletal pain within the past year. The high prevalence observed in their study supports the notion that musculoskeletal issues are common in healthcare-related student populations.

Furthermore, the associated risk factors identified in their study such as lack of physical exercise and engagement in strenuous clinical placements aligns with the high number of risk factors observed in the current study. These similarities suggest that both individual lifestyle factors and academic or clinical demands play a crucial role in the development of musculoskeletal complaints. However, their study found that posture during self-study and the use of smart phones or laptops were not significantly associated with musculoskeletal pain, which may indicate that not all commonly presumed factors contribute equally.

Overall, both studies highlight the importance of addressing modifiable risk factors, particularly physical inactivity and the demands of clinical training. There is a need for targeted interventions such as ergonomic education, structured physical activity programs, and modifications in clinical training schedules to reduce the risk and prevalence of musculoskeletal complaints among students.

3. The present study was conducted to associate the prevalence and risk factors of musculoskeletal complaints with selected demographic variables among nursing students. The findings revealed that there was no statistically significant association between the prevalence of musculoskeletal complaints and the selected demographic variables. Similarly, no significant relationship was found between the identified risk factors and demographic characteristics of the participants.

This lack of significant association suggests that musculoskeletal complaints and their related risk factors are uniformly distributed across the study population, irrespective of demographic differences such as age, gender, or year of study. In other words, all nursing students appear to be equally vulnerable, likely due to the common academic and clinical demands inherent in nursing education, including prolonged standing, patient handling, and physically demanding clinical duties.

These findings are partially consistent with the study conducted by Prateek Behera et al. at All India Institute of Medical Sciences Bhopal, which reported a high prevalence of musculoskeletal pain among nursing students but emphasized lifestyle and clinical exposure factors such as lack of physical activity and strenuous clinical placements rather than demographic variables as significant contributors. This supports the current study's observation that modifiable behavioural and occupational factors may play a more decisive role than demographic characteristics.

The absence of significant association in the present study may also be attributed to the relatively homogeneous nature of the sample, as nursing students often share similar schedules, workloads, and clinical environments. Consequently, variations in demographic factors may not be sufficient to produce measurable differences in musculoskeletal outcomes.

Overall, the study highlights that musculoskeletal complaints are a common and widespread issue among nursing students, affecting individuals regardless of their demographic background. Therefore, preventive strategies should be implemented at the population level rather than targeting specific demographic groups. Interventions such as ergonomic education, regular physical exercise programs, and improved clinical training practices are essential to reduce the burden of musculoskeletal complaints in this population.

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