

The Prevalence of Musculoskeletal Pain in Male Cigarette Smoking Students at Shiraz University of Medical Sciences, Iran

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Abstract

Background: The rising trend of smoking cigarettes, especially among the youth, has become a great concern in Iranian society. Not only does smoking cigarettes harm one financially, but also it will cause immense damage to the smoker as well as the society. This paper investigated the prevalence of musculoskeletal pain and the factors affecting it in young smokers.

Methods: The research has been conducted on 400 men smokers aged 18-30 studying at Shiraz University of Medical Sciences. Data was collected through a questionnaire containing information about age, history and amount of smoking, existence of pain and its severity according to the visual analog scale (VAS). The subjects were randomly selected while making sure the proportion of subjects from each department was appropriate. The subjects were smokers for more than two years and smoked more than five cigarettes a day. Data was analyzed by analysis of variance (ANOVA) and the least significant difference (LSD) test.

Findings: Among all studied subjects, 129 (32.25%) suffered from musculoskeletal pain. Most of the subjects (31.25%) had pain in their backs. The relationship between the duration of smoking and musculoskeletal pain, as well as that between the number of cigarettes smoked per day and the pain, was direct and significant. However, no significant relationship was found between age and pain.

Conclusion: The occurrence of musculoskeletal pain in male students was relatively high. This fact can bring irrecoverable damages to the society and would put its health at risk. It also decreases the socioeconomic improvements.

Keywords: Cigarette, Musculoskeletal pain, Youth.

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Introduction

The harmful effects of cigarettes on various body organs are not covered to anyone,¹ but their impacts on musculoskeletal system, which is the cause of movement and physical activity, are still shrouded in ambiguity. Brage and Bjerkedal were among the first researchers who studied the subject. They conducted a study on 6681 smokers and reported the subjects to be suffering from musculoskeletal pain, especially in the neck, back and upper limbs².

Eriksen et al. also carried out a study on the effects of smoking on physical activity during 1989-1994. They reported long-term working disability, lower physical fitness and limitations in performing social and daily activities in smokers.^{3,4} Boshuizen et al. were also aware of the impact of smoking on musculoskeletal pain and reported the existence of pain in the back, neck and limbs in smokers.⁵

In another research on pain in housewives, Eriksen et al. discovered smoking as associated with pain severity.⁶ A longitudinal study on adolescents in Canada indicated that smoking increased the risk of low back pain. A relationship was also observed between smoking and increased low back pain⁷.

Most studies on the relationship between smoking and musculoskeletal pain have mainly been conducted at older ages. Increasing cigarette smoking, especially among the youth, has become one of the major problems of Iranian society. Most young consumers believe that the recreational smoking of cigarette would be harmless. In every society, the youth are considered to be the dynamic and efficient socio-economical power whose health ensures the future health of the whole society.

Therefore, this study focused on the prevalence of musculoskeletal pain in the 18 to 30-year-old male students smoking cigarettes.

Methods

This cross-sectional study was conducted on 400 male students of Shiraz University of Medical Sciences aged 18-30 years. The subjects were collected by proportional method according to the number of students and their courses from the Schools of Medicine, Dentistry, Rehabilitation, Nursing, Health, Paramedical and Pharmacy. All participants had smoked 5 or more cigarettes per day for at least 2 years.

The subjects did not have any acute musculoskeletal or arthritic diseases, cancer, stroke, and other diseases affecting the musculoskeletal system.

The data was collected using a questionnaire with items regarding duration of smoking, rate of consumption, presence or absence of pain in the past six months, location of the pain, pain intensity according to the VAS (Visual Analog Scale) and age. The collected data were analyzed by the analysis of variance (ANOVA) and least significant difference (LSD) test.

Results

The results showed that 129 smoker students (32.25%) suffered from musculoskeletal pain. Pain was most prevalent in back 40 (31.25%), lower limbs 37 (28.9%), upper limbs 31 (24.21%), and neck 15 (11.71%) (Figure 1).

There was a significant relationship between smoking duration and musculoskeletal pain ($P = 0.008$). A direct relationship existed between the percentage of patients with musculoskeletal pain and duration of smoking (Table 1).

In addition, subjects who smoked higher numbers of cigarettes per day experienced more musculoskeletal pain. This relationship was also statistically significant ($P = 0.0001$) (Table 2).

No statistically significant relationship was observed between age and musculoskeletal pain ($P = 0.2$) (Table 3).

Table 1. The relationship between smoking duration and musculoskeletal pain

Duration of smoking	2-5 years		5-9 years		9-13 years	
	Absolute frequency	Relative frequency	Absolute frequency	Relative frequency	Absolute frequency	Relative frequency
Without pain	219	72.8%	44	53.7%	8	47.1%
With pain	82	27.2%	38	46.3%	9	52.9%
Total	301	100.0%	82	100.0%	17	100.0%

$P = 0.0008$

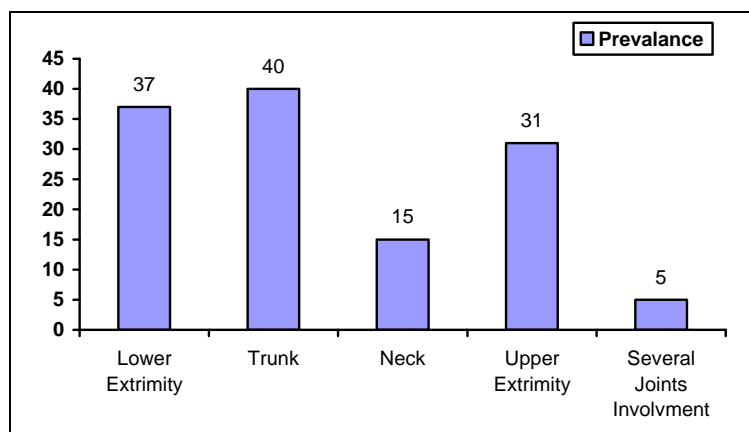


Figure 1. Absolute frequency of smoking students suffering from musculoskeletal pain depending on the location of the pain

Table 2. The relationship between the number of cigarettes smoked per day and musculoskeletal pain

Number of cigarettes per day	5-9		10-14		15-19		More than 20	
	Absolute frequency	Relative frequency	Absolute frequency	Relative frequency	Absolute frequency	Relative frequency	Absolute frequency	Relative frequency
Without pain	115	75.16%	104	71.23%	33	60.0%	19	41.30%
With pain	38	24.83%	42	28.76%	22	40.0%	27	58.69%
Total	153	100.0%	146	100.0%	55	100.0%	46	100.0%

P = 0.0001

Table 3. The relationship between age of the students (in years) and musculoskeletal pain

Age (in years)	18-21		21-24		24-27		27-31	
	Absolute frequency	Relative frequency	Absolute frequency	Relative frequency	Absolute frequency	Relative frequency	Absolute frequency	Relative frequency
Without pain	21	70.0%	97	73.48%	103	66.88%	51	60.71%
With pain	9	30.0%	35	26.51%	51	33.12%	33	39.28%
Total	30	100.0%	132	100.0%	154	100.0%	84	100.0%

P = 0.2

Discussion

Findings of the present study showed the relatively high prevalence of musculoskeletal pain in the male students, i.e. almost a third of the subjects, despite their young age, had suffered from musculoskeletal pain. According to previous investigations, nicotine can act as a vasoconstrictor resulting in deficient blood supply which can cause pain. Animal studies have also demonstrated nicotine to have various effects including hypoxia in the tissue, vertebral disc damage, and histological changes in the disk. Nicotine can also increase the concentration of

calcium ions. The result will be a short-term increase in muscle contractions which can cause fatigue and pain.^{8,9} Similar to the research conducted by Feldman et al.,¹⁰ Ueno et al.,¹¹ Leboeuf-Yde et al.,¹² and Mikkonen et al.,¹³ in the present study, pain was most common in the lower back (31.25%). Ueno et al. reported the prevalence of lower back pain to be 53.2% among smokers. They also found a positive correlation between smoking and back pain.¹¹ In a prospective study, Feldman et al. reported that the prevalence of back pain among smokers was more than non-smokers.¹⁰

However, the results of the present study were inconsistent with those of Boshuizen et al.'s. They suggested pain in the organs to be more prevalent than back and neck pain.⁵ McPartland and Mitchell noted that nicotine increases the plasma epinephrine which can lead to insomnia and decreased bone minerals. As a result, the possibility of small fractures in the spine is increased.¹⁴ A significant relationship was observed between musculoskeletal pain and duration and amount of smoking. In other words, an increase in duration and amount of smoking would cause more apparent destructive effects due to the impact of nicotine on vasoconstriction and increasing epinephrine. Feldman et al. also observed a significant relationship between the duration of smoking and the incidence of musculoskeletal pain.¹⁰ Likewise, Mustard et al. found a relationship between smoking and lower

back pain.¹⁵ In our study, there was no significant relationship between age and musculoskeletal pain, perhaps due to the age range of the participants. However, Ueno et al. studied construction workers (who were older than our participants) and discovered a significant relationship between age and musculoskeletal pain.¹¹ In order to investigate this relationship precisely, the smokers in different age groups need to be considered.

Conflict of Interest: The Authors have no conflict of interest.

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بررسی شیوع دردهای عضلانی- اسکلتی در دانشجویان پسر ۳۰-۱۸ ساله مصرف کننده سیگار دانشگاه علوم پزشکی شیراز

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چکیده

مقدمه: مصرف رو به افزایش سیگار، به خصوص در بین جوانان، به یکی از معضلات جامعه بدل شده است. سیگار نه تنها از لحاظ اقتصادی زبان‌های فراوانی ایجاد می‌کند، بلکه بر سلامتی فرد و اجتماع نیز اثر می‌گذارد. تحقیق حاضر به منظور بررسی شیوع دردهای عضلانی- اسکلتی در جوانان سیگاری و عوامل مؤثر بر بروز این گونه دردها انجام شد.

روش‌ها: تحقیق حاضر بر روی ۴۰۰ دانشجوی پسر سیگاری ۳۰-۱۸ ساله در دانشگاه علوم پزشکی شیراز صورت گرفت. روش گردآوری داده‌ها با استفاده از پرسش‌نامه بود و افراد به صورت تصادفی و به تناسب از دانشکده‌های مختلف دانشگاه علوم پزشکی شیراز انتخاب شدند. افراد تحت مطالعه بیش از دو سال و روزانه بیش از پنج نخ سیگار مصرف می‌کردند. پرسش‌نامه حاوی اطلاعات سن، مدت مصرف سیگار، میزان مصرف، وجود یا عدم وجود درد، محل درد و شدت درد بر اساس Visual analog scale (VAS) بود. داده‌های جمع آوری شده با استفاده از آنالیز واریانس و تست Least significant difference (LSD) مورد بررسی قرار گرفت.

یافته‌ها: ۱۲۹ نفر (۳۲/۲۵ درصد) از افراد از دردهای عضلانی- اسکلتی رنج می‌بردند. بیشتر افراد (۳۱/۲۵ درصد) درد در ناحیه کمر داشتند. رابطه بین مدت مصرف سیگار و درد عضلانی- اسکلتی معنی‌دار بود ($P = ۰/۰۰۰۸$) و با افزایش مدت مصرف سیگار احتمال وجود درد عضلانی- اسکلتی افزایش می‌یافت. همچنین رابطه بین تعداد نخ سیگار مصرفی در روز و درد عضلانی- اسکلتی معنی‌دار بود ($P = ۰/۰۰۰۱$) و با افزایش تعداد نخ سیگار بروز درد عضلانی- اسکلتی زیادتر می‌شد. بین سن و درد عضلانی- اسکلتی رابطه معنی‌داری مشاهده نشد ($P = ۰/۲$).

نتیجه‌گیری: دردهای عضلانی- اسکلتی در دانشجویان پسر شیوع به نسبت بالایی داشت. این امر با توجه به جوان بودن سن افراد می‌تواند صدمات جبران ناپذیری را بر پیکره اجتماع وارد نماید و سلامت آینده جامعه را در معرض خطر قرار دهد. همچنین می‌تواند نیروی کارآمد اجتماعی- اقتصادی جامعه را کاهش دهد.

واژگان کلیدی: سیگار، دردهای عضلانی- اسکلتی، جوانان.

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نویسنده مسؤول: فرزانه مسلمی حقیقی