

The prevalence of and risk factors for neck pain in Hong Kong Chinese

E. M. C. Lau, A. Sham and K. C. Wong

Abstract

Background Neck pain has been found to be a prevalent musculoskeletal complaint among Caucasians living in Europe and North America. The prevalence of and risk factors for this condition have not been studied among Chinese living in urbanised cities. The objective of this study was to describe the prevalence of and risk factors for neck pain in Hong Kong Chinese.

Methods A household survey was conducted in two housing blocks, one being government-subsidised housing and the other being private housing. Eight hundred men and women who were 30 years and older were interviewed on the occurrence and characteristics of neck pain, occupations and recreational activities. The life-time and one-year prevalence of neck pain were calculated, and the odds ratio (OR) and 95 per cent confidence intervals (95 per cent CI) for various risk factors were derived by logistic regression.

Results The one-year prevalence of neck pain was 15 per cent and 17 per cent in men and women, respectively. The OR was 1.6 (95 per cent CI = 1.2–2.4) for living in private housing and 2.1 (95 per cent CI = 1.1–4.0) for working as managers and professionals. Subjects with neck pain spent more time reading, and a history of trauma to the neck was a significant risk factor for subsequent pain (OR = 5.6, 95 per cent CI = 3.3–9.4).

Conclusion Neck pain is a prevalent problem in Hong Kong Chinese, particularly among subjects of a high socio-economic status. There was little association between life-style and neck pain, although subjects with neck pain spent more time in reading.

Keywords: neck pain, Chinese, prevalence, risk factors

Introduction

Neck pain is a common disorder in both men and women. In two population surveys conducted in Sweden, the prevalence of persistent neck pain was found to be 30 per cent¹ and 22 per cent,² respectively. A similar prevalence of 26 per cent was found in Finland.³ Moreover, the prevalence of neck pain was found to be high among such occupational groups as secretaries and other office workers,^{4,5} factory workers⁶ and construction site workers.⁷

A global geographical pattern for neck pain has not been established and the epidemiology of neck pain has not been studied in Hong Kong Chinese. Our objectives are to document the prevalence of and risk factors for neck pain in our population.

Subjects and methods

There are no population registers in Hong Kong and most cross-sectional studies are conducted as household surveys. This study was carried out in two housing blocks in Shatin, Hong Kong. The first block was government-subsidised housing, and the requirement for residing in these flats was a monthly household income of HK\$9000 or less (the median household income for Hong Kong). The second block was private housing, where most of the families owned the apartments. The two housing blocks were located four streets apart. Both were built on the level and there were slight environmental differences between them.

A letter of invitation was sent to every household in these two housing blocks, to inform them of the purpose of the study and the proposed dates of the visits. Trained student interviewers then visited the apartments to interview all adults aged 30 years. Subjects not at home at the original time of the interview were revisited later. Each apartment was visited three times before being declared 'unoccupied'.

The definition of neck pain was according to the Nordic questionnaire⁸ (Fig. 1). Subjects were asked if they ever had neck pain lasting for a day or more,

Department of Community and Family Medicine, The Chinese University of Hong Kong, Hong Kong.

E. M. C. LAU, Associate Professor

A. SHAM, Research Assistant

K. C. WONG, Medical Student

Address correspondence to Dr E. M. C. Lau, at Department of Community Medicine, The Chinese University, 4th Floor, Lek Yuen Health Centre, Shatin, Hong Kong.

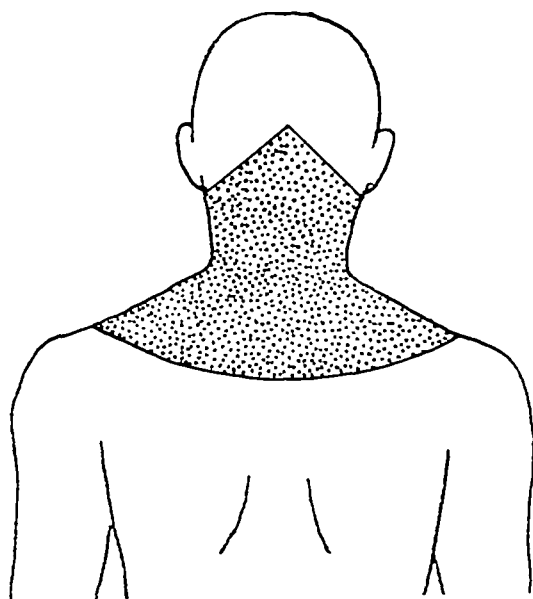


FIGURE 1 Diagram of the neck area.

and if such pain had occurred in the preceding year. The subjects were then instructed to indicate the pain area on a drawing (Fig. 1). Neck pain was diagnosed if it was located within the defined area. The subjects were then interviewed as to whether the pain had ever radiated to the arm, whether the pain had ever interfered with sleep, and whether they had had a consultation or an operation for neck pain. The total number of days off work owing to the pain was recorded.

Questions on current occupations and job nature were then asked. The current occupations were then classified into managerial and professional, secretarial and clerical, light industrial, heavy industrial or manual, and others according to a list compiled for this study.

The risk factors section of the questionnaire consisted of questions on the number of hours spent reading, watching television, playing Mahjong (a popular local 'card' game) and sports activities in the last typical week. Questions on previous accidents involving the neck were asked, and a cigarette smoking history was taken.

The one-year and life-time prevalence of neck pain were calculated. The odds ratios (OR) and 95 per cent confidence intervals (CI) for occupational and life-style factors of neck pain were derived by logistic regression, with the subjects who had ever had neck pain being defined as cases, and the rest of the study subjects as controls.

Results

The response rate was 70 per cent in both housing blocks. The age- and sex-specific prevalence of neck pain is shown in Table 1. Fifteen per cent of men and 17 per cent of women had had neck pain in the previous year. The life-time prevalence of neck pain was similar in both sexes, being 31 per cent in men and 27 per cent in women. In women, the life-time and one-year prevalence of neck pain apparently decreased after 60 years of age. Such changes were not observed in men. The prevalence of neck pain also differed by housing types, being 24 per cent ($n=531$) in subjects living in government-subsidized housing and 39 per cent ($n=269$) in subjects living in private housing.

The prevalence of neck pain with different characteristics is shown in Table 2. Although less than 1 per cent of study subjects had had operations performed for neck pain, the morbidity associated with this condition was considerable. Forty-five per cent of our study subjects were housewives or unemployed. Of those subjects who were working, 6.5 per cent have had one or more days off work owing to neck pain. For this group, the mean number of days off was 8.8 (SD = 22).

The OR and 95 per cent CI of various factors for neck pain are shown in Table 3. The risk factors which were significantly associated with ever having neck pain were: living in private housing, previous neck injury, and being in managerial and professional jobs.

The mean number of hours which the subjects spent on various recreational activities in a week is shown in Table 4. Subjects with neck pain spent more time reading than controls, who watched more television ($p < 0.01$).

Discussion

Owing to the lack of local population registers, random population samples are difficult to obtain in Hong

TABLE 1 Prevalence (per cent) of neck pain by age and sex

Age (years)	Neck pain ever		Neck pain in past 12 months	
	Men ($n = 301$)	Women ($n = 499$)	Men ($n = 301$)	Women ($n = 499$)
30-39	38	34	16	24
40-49	38	34	17	21
50-59	21	43	10	24
60-69	29	17	18	11
≥70	25	17	16	10
Total	31	27	15	17

TABLE 2 Life-time prevalence (per cent) of neck pain with various characteristics

	Men (<i>n</i> = 301)	Women (<i>n</i> = 499)
Neck pain lasting for a month or more (with pain on most days)	7	12
Neck pain radiating to fingers	7	10
Neck pain interfering with sleep	10	16
Neck pain necessitating a medical consultation	16	16
Neck pain necessitating an operation	0.7	0.2

Kong. Most prevalence studies are conducted as household surveys, as is the current study. We have surveyed two cluster samples of different socio-economic status in Hong Kong, with similar response rate from both housing blocks. These blocks were located close to one another, with few environmental differences between them.

The results of our study showed that neck pain is a prevalent problem in Hong Kong Chinese, with the lifetime and one-year prevalence being 28 per cent and 16 per cent, respectively. Neck pain was found to be equally prevalent in both men and women, although we could not conclude if the prevalence of neck pain genuinely decreased with age in women.

TABLE 3 Odds ratio (OR) and 95 per cent confidence intervals (CI) of neck pain for various risk factors*

	OR (95% CI)
<i>Life-style factors</i>	
Living in public housing	1
Living in private housing	1.64 (1.2–2.4)
Non-smoker	1
Smoker and ex-smoker	1.1 (0.7–1.6)
Never hospitalized for accidents involving neck	1
Hospitalized for accidents involving neck†	5.6 (3.3–9.4)
<i>Current occupation</i> (all the others as baseline for comparison)	
Managerial and professional (<i>n</i> = 39)	2.1 (1.1–4.0)
Secretaries and clerks (<i>n</i> = 56)	0.9 (0.5–4.3)
Light factory workers (<i>n</i> = 87)	0.5 (0.3–1.0)
Heavy industry and construction workers (<i>n</i> = 15)	1.2 (0.3–2.6)

* Calculated by multiple logistic regression and adjusting for age and sex.

† Pain in the year of the accident was excluded.

TABLE 4 The mean number of hours for various recreational activities (in a typical week) among cases and controls

	Cases Mean (SD)	Controls Mean (SD)
Reading	9.7 (13.1)	6.4 (10.1)*
Watching TV	12.6 (10.5)	14.9 (12.1)*
Playing 'Mahjong'	2.0 (5.5)	1.8 (5.4)
Sports activity	0.9 (2.9)	0.7 (2.9)

* $p < 0.01$ by *t*-test.

Before proceeding to a comparison of our results with findings from Northern European studies,^{1–3} the methodological differences should be described. In the European studies, self-administered questionnaires were sent to random population samples. Moreover, the interpretation of 'neck pain' was left to study subjects. Given such differences, our results are surprisingly similar. In Europe, the one-year prevalence of neck pain was found to be 20–30 per cent.^{1–3} Moreover, the prevalence was found to be higher in men and to decrease with age in Sweden,² but not in Finland.³

There are several ways to account for the decrease in the prevalence of neck pain with age. The possibility of survival bias is remote, for neck pain is unlikely to be associated with earlier death. Cohort effects may exist. For instance, the younger generations are more likely to have worked with visual-display units. Finally, recall bias cannot be excluded, for older subjects may be less likely to report neck pain which occurred a long time ago.

In our study, the prevalence of neck pain was higher in subjects living in privately owned housing than in government-subsidized housing. This contrasted with findings from Sweden,² where it was found that neck pain is more prevalent in less affluent subjects.

In Hong Kong, we have found only managers and professionals to be at an increased risk of neck pain. This contrasted with findings from Europe. In Denmark, Andersen and Gaardboe found that the relative risk of neck pain approached four in sewing machine operators.⁹ In Sweden, Kamwendo *et al.*⁴ found the one-year prevalence of neck pain to be as high as 63 per cent in medical secretaries. The variability of such observations may be due to difference in work practice, or to psychological and physical reaction to work. For instance, although monotonous work, high perceived work load, and time pressure have been found to be related to musculoskeletal symptoms in production and clerical workers in Europe,^{10,11} this may not be so in our population. In contrast, stress at work may account

for the high prevalence of neck pain among managers and professionals in Hong Kong.

We have also found that subjects with neck pain spent significantly more time reading than controls, who watched more television. This may merely be a reflection of the differences in life-style between social classes, or may be suggestive of the relationship between posture and neck pain. As expected, a past history of trauma was a risk factor for subsequent neck pain.

Finally, the epidemiology of neck pain can be contrasted with that of low back pain in our population. We have previously found that low back pain occurred much more frequently in manual workers in whom lifting at work was a risk factor.¹² In contrast, neck pain was found to be a prevalent problem among managers and professionals in this study. As our results provide little insight into the exact role of occupational activities in the aetiology of neck pain, further epidemiological investigations will be worth while.

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