と比較可能になると期待される。

また，64歳以下にも利用可能なスクリーニング法とその年代別平均値が提示されたことが，運動器の健康を維持することの重要性を若い世代に啓発することにつながると期待される。自治体や会社での健康診断に取り入れることによって，運動器に問題を持つ人を検出して，生活指導や受診紹介へとつなげていくことが可能となる。特に肥満を中心とするメタボリックシンドロームとロコモは関連性がすでに指摘されており，今後，生活習慣病の健診と運動器の健診とが相互に連動性を持ちながら形成されていくことも予想される。

7 ロコモ度テストの注意点

一方，注意点として現時点で「この点数を超えたらロコモ」という基準値が確定していないことを忘れてはいけない。今後，実施される調査結果を経て，エビデンスに裏づけられた基準値が設定されることが期待される。一方，若い世代，たとえば40歳代の人にとって，30年後に介護になるかもしれないリスクを語ることは，実証不能であることもあって，あまり意味を持たない。今後も，何らかの世代別平均値が運動器の健康維持の指標となっていくと思われる。

また，各テストの平均値はいずれも運動器疾患を持たない人を対象に得られたデータであることに，十分留意する必要がある。整形外科外来を受診する人たちを対象とした場合はもっと数値が悪いことが予想されるため，外来での指導において患者に説明する数値としてロコモパンフレット2013年度版で発表された数値を使用する際は注意を要する。一方，同一症例に対して継時的な変化を追うための利用については問題がないと思われる。

今後，立ち上がりテスト，2ステップテスト，ロコモ25を軸としての調査や介入試験が蓄積するとともに，基準値が明確になっていくことが期待される。したがって，正しい検査法を理解した上で，値についての情報をアップデートしていくことが重要である。

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Q1

ロコモティブシンドロームとサルコペニアは何が違うのか？

Answer どちらも移動機能障害の原因になるという点では類似点がある。サルコペニアは栄養障害や不活動を通じて各臓器の適応能力が低下する「老人虚弱（geriatric frailty）」という，より広い疾病概念の中に位置づけられている。ロコモでは，その中の不活動の主要原因である移動機能障害をクローズアップし，関節軟骨，神経調節，痛みといったサルコペニアには含まれないものの運動器機能に影響する要素も含めてとらえている。実際には，老人虚弱に至るプロセスの中で健常者がロコモに移行するフェーズがある，と考えてよいであろう。

Q2

50歳代の患者さんに「ロコモが心配で」と言われた時どのように対応すべきか？

Answer 50歳代の人にとって，要介護への移行が眼前にある問題であることは稀である。ただ，ロコモはある日急に生じる状態ではなく，徐々にその状態に近づいていくものと考えられる。そうならないようにするひとつの目安が，ロコモ度テスト3項目の点数と年齢別平均値との関係である。平均値を下回るようであれば，原因が何かを確認し，必要に応じて局所の治療，あるいは運動習慣の導入を指導する。

Q3

ロコチェック7項目は今後どのように使えばよいのか？

Answer ロコモパンフレット2013年度版のロコモ度テストには，ロコチェックは含まれていない。しかし，自己判定スクリーニング法としてのロコチェックの有用性は高く，今後も高齢者に対するスクリーニング調査において，ロコチェック7項目中で該当する項目がいくつあるかという活用が行われると思われる。

Q4

ロコモ度テストにはバランステストが入っていないが，評価しなくてよいのか？

Answer バランス機能はロコモの重要な要素のひとつで，ロコモ25の質問の中にはバランスに関する項目が含まれている。また，2ステップテスト，立ち上がりテストともに柔軟性やバランス機能も含んだ複合機能テストと考える。バランス評価に用いられることが多い片脚立ちテストは若年者に対する識別力が低い傾向があるが，測定対象の年齢層によっては評価項目に加えることも有用と考えられる。

✎緒方　徹

Spine

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EPIDEMIOLOGY

Identification of Risk Factors for New-Onset Sciatica in Japanese Workers

Findings From the Japan Epidemiological Research of Occupation-Related Back Pain Study

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Study Design. Two-year, prospective cohort data collected for the Japan epidemiological research of Occupation-related Back pain study were used for the analysis.

Objective. To identify potential risk factors for the development of new-onset sciatica in initially symptom-free Japanese workers with no history of sciatica.

Summary of Background Data. Although the associations between individual and occupational factors and cases of new-onset sciatica are established, the effect of psychosocial factors on the development of sciatica has still not been adequately clarified.

Methods. In total, 5310 participants responded to a self-administered baseline questionnaire (response rate: 86.5%). Furthermore, 3194 (60.2%) completed both 1- and 2-year follow-up questionnaires. The baseline questionnaire assessed individual characteristics, ergonomic work demands, and work-related psychosocial factors. The outcome of interest was new-onset sciatica with or without low back pain during the 2-year follow-up period. Incidence was calculated for participants who reported no low back pain in the preceding year and no history of lumbar radicular pain (sciatica) at baseline. Logistical regression assessed risk factors associated with new-onset sciatica.

Results. Of 765 eligible participants, 141 (18.4%) reported a new episode of sciatica during the 2-year follow-up. In crude analysis, significant associations were found between new-onset sciatica and age and obesity. In adjusted analysis, significant associations were found for obesity and mental workload in a qualitative aspect after controlling for age and sex. Consequently, in multivariate analysis with all the potential risk factors, age and obesity remained statistically significant (odds ratios: 1.59, 95% confidence interval: 1.01–2.52; odds ratios: 1.77, 95% confidence interval: 1.17–2.68, respectively).

Conclusion. In previously asymptomatic Japanese workers, the risk of developing new-onset sciatica is mediated by individual factors. Our findings suggest that the management of obesity may prevent new-onset sciatica.

Key words: sciatica, new-onset, prospective study, obesity, industrial health, risk factors, Japanese workers, asymptomatic, low back pain, psychosocial factors.

Level of Evidence: 3

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Sciatica is a symptom, rather than specific diagnosis,[1] characterized by low back pain (LBP) radiating below the knee.[2,3] The condition is also known as lumbosacral radicular syndrome, radiculopathy, nerve root pain, and nerve root entrapment or irritation. A variety of pathologies lead to sciatica: although lumbar disc herniation with nerve root compression is the main cause, lumbar spinal stenoses and tumors have also been reported.[2] The lifetime prevalence of sciatica ranges from 12.2% to 43% and can be influenced by varying definitions of sciatica and/or methods of assessing the condition.[1] Sciatica is usually more persistent and severe than nonspecific LBP, which is not attributable to any identifiable pathology in the spine. Although the symptoms usually improve within several weeks of onset, 40% still experience restriction in work 3 months after new-onset sciatica, and more than 30% continue to experience restriction in work 1 year after new-onset cases.[4] Sciatica often leads to deterioration in individual well-being, prolonged absence from work, and a significant health care burden.[4–8]

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Prior research has identified individual and occupational factors that act as risk factors for the development of sciatica. For example, strong associations were found with age,[9] height,[10] obesity,[11] smoking, driving,[10] leisure-time physical activity,[9,11] occupation,[11] and twisting of the trunk at work.[8] Unlike individual and occupational factors, the association between psychosocial factors and the development of new-onset sciatica is still ambiguous due to both a lack of research in the area and inconsistencies in results.[9,10,12,13]

Serious cases of sciatica impact both individuals and society in the context of the workplace and health care burden inflicted. Therefore, identification of risk factors is highly important. However, research is limited, particularly on the effect of psychosocial factors on the development of sciatica. Therefore, this study aimed to examine the associations between new-onset sciatica and individual factors, ergonomic work demands, and work-related psychosocial factors in initially symptom-free Japanese workers.

MATERIALS AND METHODS

Data Source

The study analyzed a 2-year prospective cohort of the Japan epidemiological research of Occupation-related Back pain study. Ethical approval was granted by the review board of the Minister of Labour, Health and Welfare (MLHW) of Japan. Participants for the Japan epidemiological research of Occupation-related Back pain study were recruited at 16 local offices of participating organizations in or near Tokyo. The occupations of the participating employees were diverse (*e.g.*, office workers, nurses, sales/marketing personnel, and manufacturing engineers). Self-administered baseline questionnaires were dispersed among the employees by the board of each participating organization. Participants provided written informed consent for participation and returned completed questionnaires, along with their name and address for the purpose of follow-up, directly to the study administration office.

Baseline questionnaires on a prior diagnosis of lumbar radicular pain (sciatica) by an orthopedician, experience of pain and/or numbness radiating below the knee with or without LBP, episodes and severity of LBP, individual characteristics (*e.g.*, age, sex, obesity, height, smoking habits, education), ergonomic work demands (*e.g.*, manual handling at work, frequency of bending, twisting, hours of driving per day), and work-related psychosocial factors (*e.g.*, interpersonal stress at work, job control, reward to work, somatization, depression). To evaluate psychosocial factors, the Brief Job Stress Questionnaire (BJSQ) developed by the MLHW of Japan[14,15] was used. This questionnaire contains 57 questions and assesses 19 work-related factors: mental workload (quantitative aspect), mental workload (qualitative aspect), physical workload, interpersonal stress at work, work environmental stress, job control, utilization of skills and expertise, job fitness, job satisfaction, vigor, anger, fatigue, anxiety, depressed mood, somatic symptoms, support by supervisors, support by coworkers, support by family or friends, and daily-life satisfaction. Work-related stress factors were rated on a 5-point Likert scale ranging from the lowest score of 1 to the highest score of 5.

The BJSQ incorporates questions from various standard questionnaires such as the JCQ (Job Content Questionnaire),[16] the NIOSH (National Institute for Occupational Safety and Health),[17] the POMS (Profile of Mood States),[18] the CES-D (Center for Epidemiologic Studies Depression Scale),[19] the STAI (State-Trait Anxiety Inventory),[20] the SSD (Screener for Somatoform Disorders),[21] and the SUBI (Subjective Well-Being Inventory).[22] Standardized scores were developed for the 19 individual factors based on a sample of approximately 10,000 Japanese workers. The BJSQ has been shown to have internal consistency, reliability, and criterion validity with respect to the Job Content Questionnaire and NIOSH.[23]

The follow-up questionnaire was distributed 1 and 2 years after the baseline assessment. The follow-up questionnaires included questions on the experience of pain and/or numbness radiating below the knee with or without LBP (sciatica) in the past year, episodes of LBP, and severity of LBP.

Data Analysis

The outcome of our interest was the development of new-onset sciatica during the 2-year follow-up period. In this study, new-onset sciatica was defined if a participant reported no LBP in the preceding year as well as no history of lumbar radicular pain (sciatica) diagnosed by an orthopedician at the time of completion of the baseline questionnaire, but subsequently reported new-onset sciatica with or without LBP in the year before either the 1-year or 2-year follow-up survey. Workers were excluded from the analysis if they had lower extremity trauma, osteoarthritis, or peripheral arterial disease during the follow-up period.

For data analysis, the following factors were initially included: (1) individual characteristics, (2) ergonomic work demands, and (3) work-related psychosocial factors. Individual characteristics included age, sex, obesity (body mass index (BMI) $\geq$ 25 kg/m^2), smoking habits (Brinkmann Index $\geq$ 400), education, hours of sleep, exercise habits, flexibility, experience at current job, working hours per week ($\geq$60 hr per wk of uncontrolled overtime), work shift, employment status, and family history of LBP with disability. Ergonomic work demands included manual handling at work; bending, twisting, lifting, pushing ($\geq$½ of the day as frequent), hours of driving per day, hours of desk work ($\geq$6 hr was determined as static posture), and monotonous work (the presence of feelings of monotony or boredom at work). Psychosocial factors were assessed with the BJSQ. The 5-point Likert scale was reclassified into 2 categories: the "not feeling stressed" category, where low, slightly low, and moderate were combined, and the "feeling stressed" category, where slightly high and high were combined.

The MLHW of Japan defines obesity as a BMI of 25 kg/m^2 or higher[24] whereas the World Health Organization definition of obesity is BMI of 30 kg/m^2 or higher.[25] The Japan Society for the Study of Obesity recommends the lower cutoff point for BMI because it is more appropriate for Japanese

due to low prevalence and mild degree of obesity.[26] For the same reasons, the World Health Organization reported that in some Asian countries including Japan lower cutoff points for BMI may be more appropriate.[27] To assess smoking habits, the Brinkmann Index[28] was calculated on the basis of the total number of cigarettes smoked per day multiplied by duration of smoking in years. A Brinkmann Index value of 400 or higher indicated that a participant was a heavy smoker, whereas a value of less than 400 indicated that a participant was a nonheavy smoker. Participants were defined as flexible if their wrists could reach beyond the knees but the fingertips could not reach the ankles, and not flexible if their wrists could not reach beyond the knees.[29]

In addition to descriptive statistics, the baseline characteristics of the participants who followed-up (the follow-up group) and those who did not follow-up (the non–follow-up group) were compared using the χ^2 test. Next, logistic regression was run to examine the associations between risk factors and new-onset sciatica. Crude and adjusted odds ratios (ORs) and the respective 95% confidence intervals were calculated to assess potential risk factors. Age and sex were included in the model because both are well-established potential confounders. Subsequently, multivariate logistical regression analysis was run and included both the potential confounders and all potential risk factors for sciatica, which were reported at a significant level of $P < 0.1$ according to the initial crude and adjusted ORs. All the factors selected in the final model were statistically significant with a P value of less than 0.05. All tests were 2-tailed. The software package STATA 9.0 (StataCorp LP, College Station, TX) was used for all statistical analyses.

RESULTS

Baseline Characteristics of the Follow-up Group and the Non–Follow-up Group

The baseline questionnaire was distributed to 6140 workers and a response rate of 86.5% was achieved (5310 workers). Of these participants, 3194 workers successfully completed and returned both 1-year and 2-year follow-up questionnaires (a follow-up rate of 60.2%) (Figure 1).

The characteristics of the follow-up group and non–follow-up group at baseline were summarized. With regards to age, 37.7%, 31.1%, and 31.2% of the follow-up groups were aged less than 40; between 40 and 49; and 50 or more, respectively, with respective proportions of 58.5%, 23.7%, and 17.9% for the non–follow-up group. Males accounted for the vast majority of individuals in both the follow-up and non–follow-up groups (80.7% *vs.* 82.4%, respectively). The majority of the follow-up group and the non–follow-up group were not obese (76.4% *vs.* 73.7%, respectively). In respect to the distribution of manual handling at work, 72.6% of the follow-up group did not engage in manual handling at work, 9.9% engaged in manual handling of objects less than 20 kg, 17.6% engaged in manual handling of objects 20 kg or more or worked as a caregiver. The respective values for the non–follow-up group were 65.3%, 13.9%, and 20.7%. The majority of the follow-up group and the non–follow-up group undertook desk work without manual handling. However, in the category of manual handling of objects less than 20 kg, the majority of the follow-up group and non–follow-up group worked in manufacturing/engineering, whereas those who fell into the category of manual handling of objects 20 kg or more were predominantly involved in nursing or worked as caregivers. There were statistically significant differences between the follow-up and non–follow-up groups in age ($P < 0.001$), obesity ($P = 0.013$), and manual handling at work ($P < 0.001$), whereas no significant difference was found in sex (Table 1).

Baseline Characteristics of the Participants for This Study

Of the 3194 participants, 765 who reported no LBP during the preceding year and had no history of sciatica at the time of completing the baseline questionnaire were included in the analyses (Figure 1). In the distribution of age groups, 37.6% were less than 40; 29.6% were between 40 and 49; and 32.8% were 50 or more. The majority were males (n = 661; 88.5%). The number of obese participants was 164 (22.1%). The jobs of 569 participants (78.4%) did not involve manual handling. However, 77 (10.6%) participants manually handled objects

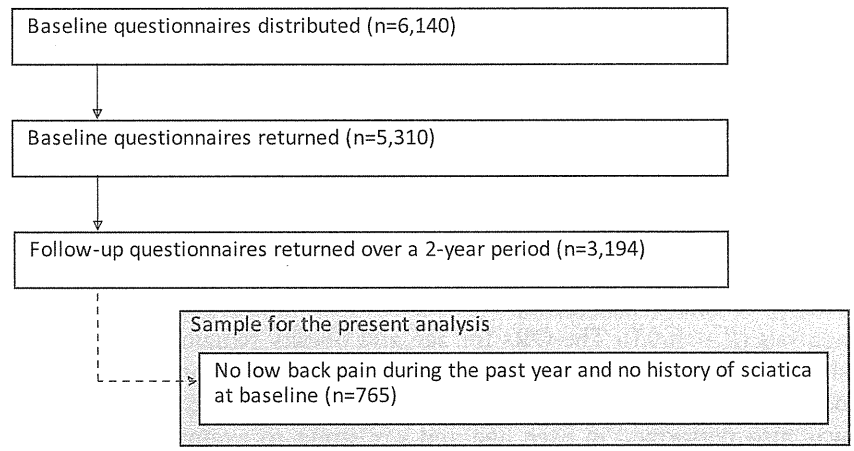

Figure 1. Flow chart of the sample selection for this analysis.

TABLE 1. Comparison of Baseline Characteristics of Follow-up Group and Non–Follow-up Group

Factors	Non–Follow-up (%)	Follow-up (%)	*P**
Age (yr)			
<40	1631 (58.5)	1205 (37.7)	<0.001
40–49	660 (23.7)	993 (31.1)	
≥50	499 (17.9)	996 (31.2)	
Sex			
Male	2417 (82.4)	2577 (80.7)	0.092
Female	517 (17.6)	616 (19.3)	
Obesity			
<BMI 25 kg/m^2	2117 (73.7)	2422 (76.4)	0.013
≥BMI 25 kg/m^2 (obese)	757 (26.3)	747 (23.6)	
Manual handling at work			
No manual handling	1823 (65.3)	2231 (72.6)	<0.001
Manual handling of <20 kg	389 (13.9)	303 (9.9)	
Manual handling of ≥20 kg	578 (20.7)	541 (17.6)	

Totals may not sum to 100% because of rounding.
**Pearson χ^2.*
BMI indicates body mass index.

less than 20 kg, 80 (11.0%) manually handled objects 20 kg or more, or worked as a caregiver.

Incidence of New-Onset Sciatica

Of a total of 765 eligible participants, 141 (18.4%) reported a new episode of sciatica during the 2-year follow-up period (18 missing cases).

Association Between New-Onset Sciatica and Potential Risk Factors

Crude and adjusted ORs for new-onset sciatica and their 95% confidence intervals are shown in Table 2. In crude analyses, age and obesity were significantly associated with new-onset sciatica (ORs of 1.50–1.84) ($P < 0.1$). Similarly, in adjusted analyses, obesity and mental workload in a qualitative aspect were significantly associated with new-onset sciatica after adjusting for age and sex (ORs of 1.39–1.80) ($P < 0.1$). Finally, all of these factors were simultaneously included in the same model to control for the other factors, as well as age and sex. As shown in Table 3, age (≥50 *vs.* <40) and obesity remained statistically significant in the multivariate analysis ($P < 0.05$). The ORs for age and obesity remained similar in both the multivariate analysis and the crude and/or adjusted analyses. A univariate logistic regression analysis was also performed in each age and sex strata to examine whether their effects on obesity and mental workload in a qualitative aspect in relation to new-onset sciatica ($P < 0.05$). As shown in Table 4, obesity in age (≥50) and male sex, and mental workload in age (<40) were statistically significant.

DISCUSSION

It is established that individual and work-related factors predispose the development of new-onset sciatica. However, information on the influence of psychosocial factors is conflicting. In our earlier study using data from the Japan epidemiological research of Occupation-related Back pain study, ergonomic factors (*i.e.*, frequent lifting) and work-related psychosocial factors (*i.e.*, interpersonal stress at workplace, monotonous tasks) were identified as potential risk factors for new-onset of nonspecific LBP with disability in workers who had no LBP during the year before the baseline survey.[30] Conversely, in this study, individual factors were the only identified potential risk factors in workers who reported no history of sciatica as well as no LBP in the year before baseline. Both studies were conducted among asymptomatic workers at baseline, yet the results varied depending upon the presence of pathology.

In this study, age was associated with the risk of developing new-onset sciatica, which is consistent with earlier research.[9] Although age is often used as a control variable in exploratory studies, not as an independent variable, it is appropriate to include age as an independent risk factor when exploring new-onset sciatica. The risk of sciatic pain seems to increase with age as the intervertebral discs and the spinal canal can often degenerate because of morphologic and functional alternations.[9] As a result, posterior disc bulges cause sciatic pain.[31]

Obesity was also found to be a risk factor for new-onset sciatica, which is again consistent with the findings of a previous report.[7] Obesity may increase the mechanical load on the intervertebral discs, but recent research has revealed that obesity may also be associated with neuropathic disorders. It has been found that obesity alters production of adipokines, including leptin and resistin, and locally produced proinflammatory cytokines such as TNF-α and IL-6 induced by obesity leads to a subclinical inflammatory condition of the white adipose tissue (WAT).[32,33] Similarly, animal work has shown that the adipokine, produced mainly by adipocytes, plays an important role not only in metabolic regulation and obesity, but also in the development of neuropathic disorder.[34–36] In addition, Miscio *et al*[37] suggested that peripheral nerve conduction abnormalities, in the lower extremities of nondiabetic obese patients with subclinical peripheral nerve impairment, increased risk for peripheral neuropathy. Thus, it seems reasonable that metabolic dysfunction may hypothetically mediate neuropathic pain including sciatica in humans. Given these earlier findings, obesity may create an environment that could easily trigger new-onset sciatica.

Results of this study implicate that reduction or prevention of obesity may offer important protection against the development of sciatica. The management of overweight and obesity by exercising, weight control, and improving dietary

TABLE 2. Crude and Adjusted Odds Ratios of Baseline Factors for Cases of New-Onset Sciatica

Factors	%	Crude OR	95% CI	*P*	Adjusted OR	95% CI	*P*
Age (yr)							
<40	37.6	1.00					
40–49	29.6	1.50	0.94–2.37	0.087			
≥50	32.8	1.57	1.00–2.46	0.048			
Sex							
Male	88.5	1.00					
Female	11.5	0.90	0.50–1.62	0.718			
Obesity							
<BMI 25 kg/m^2	77.9	1.00			1.00		
≥BMI 25 kg/m^2 (obese)	22.1	1.84	1.23–2.78	0.003	1.80	1.19–2.72	0.005
Height							
<167 cm (female)/<180 cm (male)	94.0	1.00			1.00		
≥167 cm (female)/≥180 cm (male)	6.1	0.78	0.34–1.79	0.564	0.87	0.37–2.00	0.736
Smoking habits							
Nonheavy smoker	71.5	1.00			1.00		
Heavy smoker	28.5	1.35	0.89–2.03	0.157	1.20	0.76–1.88	0.432
Education							
College/university	71.8	1.00			1.00		
High school/junior high school	28.2	0.94	0.62–1.42	0.765	0.85	0.56–1.31	0.468
Hours of sleep							
< 5 hr	3.9	1.00			1.00		
≥ 5 hr	96.1	1.67	0.72–3.85	0.229	1.93	0.82–4.51	0.131
Exercise habits							
≥Once per week	36.6	1.00			1.00		
<Once per week	63.4	0.97	0.66–1.42	0.866	1.03	0.69–1.52	0.899
Flexibility							
Flexible	76.6	1.00			1.00		
Not flexible	23.4	1.05	0.67–1.64	0.846	1.00	0.64–1.58	0.986
Experience in current job							
<5 yr	31.4	1.00			1.00		
≥5 yr	68.6	0.74	0.50–1.08	0.121	0.72	0.49–1.07	0.102
Working hours per week							
<60 hr	85.9	1.00			1.00		
≥60 hr	14.1	0.87	0.51–1.50	0.620	0.94	0.54–1.64	0.829
Work shift							
Regular shift	86.4	1.00			1.00		
Irregular shift	13.6	1.22	0.73–2.04	0.449	1.30	0.77–2.19	0.328

(*Continued*)

TABLE 2. (*Continued*)

Factors	%	Crude OR	95% CI	*P*	Adjusted OR	95% CI	*P*
Employment status							
Full-time	95.9	1.00			1.00		
Others	4.1	1.06	0.43–2.65	0.896	0.98	0.38–2.51	0.958
Manual handling at work							
No manual handling (desk work)	78.4	1.00			1.00		
Manual handling of objects <20 kg	10.6	1.40	0.79–2.47	0.250	1.47	0.83–2.63	0.188
Manual handling of objects ≥20-kg objects or working as a caregiver	11.0	1.24	0.69–2.20	0.473	1.34	0.73–2.46	0.351
Bending							
Not frequent	95.0	1.00			1.00		
Frequent	5.0	1.19	0.53–2.66	0.674	1.22	0.54–2.75	0.639
Twisting							
Not frequent	97.0	1.00			1.00		
Frequent	3.0	0.42	0.10–1.81	0.244	0.41	0.09–1.79	0.235
Lifting							
Not frequent	95.7	1.00			1.00		
Frequent	4.3	0.98	0.40–2.44	0.973	1.02	0.41–2.57	0.960
Pushing							
Not frequent	97.7	1.00			1.00		
Frequent	2.3	1.32	0.42–4.12	0.629	1.34	0.43–4.22	0.616
Hours of driving per day							
<4 hr	92.5	1.00			1.00		
≥4 hr	7.5	1.25	0.64–2.45	0.514	1.30	0.66–2.56	0.456
Hours of desk work							
<6 hr per day	45.7	1.00			1.00		
≥6 hr per day	54.3	1.03	0.72–1.50	0.856	1.03	0.71–1.50	0.866
Mental workload (quantitative aspect)							
Not stressed	59.1	1.00			1.00		
Stressed	40.9	0.88	0.60–1.28	0.488	0.91	0.62–1.34	0.642
Mental workload (qualitative aspect)							
Not stressed	60.0	1.00			1.00		
Stressed	40.1	1.36	0.94–1.97	0.104	1.39	0.96–2.02	0.085
Physical workload							
Not stressed	70.7	1.00			1.00		
Stressed	29.3	1.13	0.76–1.69	0.539	1.21	0.80–1.81	0.364
Interpersonal stress at work							
Not stressed	84.2	1.00			1.00		
Stressed	15.8	1.20	0.74–1.95	0.466	1.31	0.80–2.15	0.285

(*Continued*)

TABLE 2. (*Continued*)

Factors	%	Crude OR	95% CI	*P*	Adjusted OR	95% CI	*P*
Work environmental stress							
Not stressed	78.3	1.00			1.00		
Stressed	21.7	1.18	0.77–1.82	0.449	1.28	0.82–1.99	0.276
Job control							
Controlled	31.2	1.00			1.00		
Not controlled	68.8	1.03	0.70–1.51	0.875	1.04	0.71–1.52	0.856
Utilization of skills and expertise							
Utilization of skills and expertise	83.4	1.00			1.00		
No utilization of skills and expertise	16.6	0.97	0.59–1.59	0.906	0.96	0.58–1.59	0.882
Job fitness							
Feeling fit	79.5	1.00			1.00		
Not feeling fit	20.5	1.36	0.88–2.09	0.163	1.37	0.89–2.11	0.154
Reward to work							
Satisfied	80.4	1.00			1.00		
Not satisfied	19.6	1.13	0.72–1.78	0.583	1.14	0.72–1.79	0.578
Vigor							
Vigorous	89.1	1.00			1.00		
Not vigorous	10.9	1.25	0.72–2.19	0.427	1.26	0.72–2.21	0.425
Anger							
Not angry	76.5	1.00			1.00		
Angry	23.5	1.22	0.80–1.86	0.358	1.30	0.84–1.20	0.233
Fatigue							
No fatigue	77.7	1.00			1.00		
Fatigue	22.3	0.93	0.60–1.45	0.750	0.98	0.62–1.55	0.944
Anxiety							
Not anxious	82.8	1.00			1.00		
Anxious	17.2	1.40	0.88–2.21	0.154	1.45	0.91–2.31	0.113
Depressed mood							
Not feeling depressed	76.9	1.00			1.00		
Depressed	23.1	1.26	0.83–1.93	0.278	1.28	0.84–1.97	0.252
Somatic symptoms							
No somatic symptoms	87.8	1.00			1.00		
Somatic symptoms	12.2	1.47	0.87–2.47	0.148	1.48	0.87–2.49	0.145
Support by supervisors							
Supported	78.5	1.00			1.00		
Not supported	21.5	1.12	0.72–1.73	0.627	1.13	0.73–1.76	0.591
Support by coworkers							
Supported	66.7	1.00			1.00		
Not supported	33.3	0.95	0.64–1.41	0.800	0.93	0.63–1.38	0.719

(*Continued*)

TABLE 2. (*Continued*)

Factors	%	Crude OR	95% CI	*P*	Adjusted OR	95% CI	*P*
Support by family or friends							
Supported	83.6	1.00			1.00		
Not supported	16.4	1.01	0.62–1.66	0.964	1.04	0.63–1.73	0.868
Daily-life satisfaction							
Satisfied	76.4	1.00			1.00		
Not satisfied	23.7	1.04	0.68–-1.61	0.844	1.10	0.71–1.70	0.664
Monotonous work							
Not monotonous	84.4	1.00			1.00		
Monotonous	15.6	0.70	0.40–1.21	0.203	0.72	0.41–1.25	0.239
Family history of LBP with disability							
No LBP with disability	86.4	1.00			1.00		
LBP with disability	13.6	1.23	0.73–2.05	0.433	1.27	0.75–2.14	0.368

Data adjusted for age and sex.
Totals may not sum to 100% because of rounding.
BMI indicates body mass index; CI, confidence interval; LBP, low back pain; OR, odds ratio.

intake is encouraged. Despite the small proportion of workers experiencing sciatica during the follow-up period (approximately 18%), economic loss at workplaces because of sciatica cannot be overestimated. Promoting available, accessible, and effective approaches for the management of overweight and obesity may improve overall industrial health by decreasing and preventing obesity and the subsequent risk of cardiovascular disease and diabetes,[38] osteoarthritis,[39] and spine diseases pertaining to obesity.[40]

TABLE 3. Multivariate-Adjusted Odds Ratios for Cases of New-Onset Sciatica

Factors	OR	95% CI	*P*
Age			
<40	1.00		
40–49	1.50	0.93–2.40	0.093
≥50	1.59	1.01–2.52	0.046
Sex			
Male	1.00		
Female	0.99	0.52–1.86	0.969
Obesity			
BMI <25 kg/m^2	1.00		
BMI ≥25 kg/m^2 (obese)	1.77	1.17–2.68	0.007
Mental workload (qualitative aspect)			
Not stressed	1.00		
Stressed	1.40	0.96–2.04	0.082

Data adjusted for age and sex.
CI indicates confidence interval; OR, odds ratio; BMI, body mass index.

Although not significant in multivariate analysis, mental workload in a qualitative aspect approached significance in crude analyses and was statistically significant in adjusted analyses ($P < 0.1$). Manual handling while under mental strain can biomechanically increase spine loads under experimental conditions.[41,42] As a result, the chance for injury, especially disc injury, increases, which may lead to the onset of sciatica. Existing literature on new-onset of sciatica relating to psychosocial factors is still scarce. Moreover, those results often conflict perhaps because different measurements were used to assess psychosocial factors. Further research is needed to elucidate the potential relationship fully between psychosocial factors and cases of new-onset sciatica.

There are some limitations to the study. Generalization of the results is an issue. First, approximately 89% of the study participants were male, and sex was an effect modifier, particularly in males. Although this study indicated that sex can be an effect modifier for obesity and mental workload, the number of females may not be sufficient to investigate effect modification. Further investigation is needed for effect modification in females. Second, there is also a concern that results may not represent workers who left work because of sciatica. Third, results may be influenced by selective drop out because 3194 workers followed-up were entered into the analysis out of 5310 participants. On the basis of the results comparing the baseline characteristics between the follow-up group and non–follow-up group (Table 1), more of the non–follow-up group were younger and engaged in no/less manual handling involved at work than the follow-up group. Although obesity