






Neck Pain, Mental Status, and Associated Factors Among Hospital Secretaries: A Cross-Sectional Study From Turkey

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Introduction: Neck disorders occur in the presence of various risk factors. Determining the cause-effect relationship is highly important in treating existing health problems. Our study aimed to determine the relationship between neck pain and mental status and the factors affecting them in hospital secretaries.

Materials and Methods: The study was cross-sectional. A total of 427 people who had been working as hospital secretaries at Gazi University Medical Faculty Hospital for at least one year were included in the study. Sociodemographic characteristics, working conditions, psychopathology levels, and the presence of neck pain were questioned. The study was conducted with 354 (82.9%) people.

Results: 34.3% of the hospital secretaries had neck pain, and 26.3% required psychiatric evaluation. There was a statistically significant ($p < 0.001$) difference in neck pain according to gender, adjustability of the chair, accessibility of the tools, and the need for psychiatric evaluation. Data was collected during November 2022. Those who did neck exercises during the study period had lower mean scores on the General Health Questionnaire-12 than those who did not, and the difference was statistically significant ($p < 0.001$). According to the General Health Questionnaire-12 scores and the Bournemouth Neck Pain Questionnaire Scale, there is a significant ($p < 0.001$), positive, and moderate ($r = 0.481$) correlation between the frequency of mental problems and neck pain disability levels.

Conclusion: The relationship between the need for psychiatric status evaluation and neck pain is striking. A significant proportion of hospital secretaries complain of neck pain, work in non-ergonomic conditions, and need psychiatric evaluation. The study's results underline the necessity of targeted workplace interventions and wellness procedures, highlighting the need to implement ergonomic improvements, promote regular exercise regimes, and provide psychosocial support services to improve the general well-being of hospital secretaries and develop a better working environment.

Keywords: neck pain, medical secretary, hospital employees, ergonomics, mental health

Introduction

Neck pain is a prevalent musculoskeletal condition that impacts many individuals.¹ It results in significant direct and indirect expenses and impacts patients' quality of life and working circumstances.² In the United States, neck pain causes 25.5 million workers to be absent for an average of 11.4 days per year.³ Neck pain results in sick leave and prompts individuals to seek treatment and file for workers' compensation claims.⁴ Neck pain affects between 15% and 41% of the working-age population worldwide each month, with around half experiencing persistent or recurring pain.⁵ Occupational groups, especially individuals who spend long periods using computers intensively, are at a high risk of developing neck pain as a common occupational hazard.⁶ Neck pain is reported by 42% to 63% of office workers annually, making it the most common across all occupations.⁷

Recent research indicates that neck and upper extremity diseases can result from a range of risk factors, such as physical, psychosocial, or individual risks.⁸ Scientific research indicates that characteristics such as gender, age, previous

disorders, and body mass index play a role in the development of work-related muscular disorders.⁹ Neck problems are significantly linked to work-related risk factors such as static postures, sitting time, and workplace design.¹⁰ Vibration, low ambient temperature, improper use of the keyboard, frequent repetition of tasks requiring strength, inadequate rest periods, excessive workload, and psychosocial factors are other important risk factors for neck and upper extremity pains.¹¹ In recent years, there has been a growing interest in investigating the impact of psychosocial variables on developing neck disorders in the workplace.¹² Emotional factors can contribute to the development and worsening of neck discomfort. Acute and chronic neck pain are linked to anxiety, depression, and emotional state.¹³ Factors such as work pressure, tedious tasks, limited decision-making authority, excessive mental stress, and lack of social support can lead to musculoskeletal complaints, such as neck pain.¹⁴

Due to the psychological dangers faced by hospital secretaries and their prolonged desk work, it was thought that mental health issues and neck pain could be common in this profession. Establishing the relationship between exposure and consequence is crucial in disrupting the harmful cycle and addressing current health issues. While neck pain and mental status have been assessed in secretaries previously, there is a lack of studies investigating both factors in hospital secretaries. Our study aims to investigate neck pain, mental status in hospital secretaries, and the factors influencing these conditions.

Materials and Methods

The study is cross-sectional. It occurred at Gazi University Faculty of Medicine Hospital, a health sciences education and research center. Four hundred twenty-seven individuals employed as hospital secretaries for a minimum of one year were included in the study. The research included all hospital secretaries without any sample selection process being implemented. A total of 354 secretaries (82.9%) who volunteered to participate and were not on medical leave were included. The study excluded individuals with a history of psychiatric medication use, neck injuries, upper extremity musculoskeletal conditions, neurological disorders, and cervical fractures.

The questionnaire is segmented into three sections and comprises 30 questions. The initial section included inquiries to establish the sociodemographic and work-related attributes of the hospital secretaries. The General Health Questionnaire-12 was used in the second part to assess the psychopathology levels of the hospital secretaries. The third section comprised inquiries regarding neck discomfort using the Bournemouth Neck Questionnaire.

The General Health Questionnaire is utilized to identify mental illness cases in community surveys. Goldberg created the initial version in 1972. Despite the variations in question counts (12, 28, 30, and 60), all variants strongly associate each other. Kılıç performed a study in Turkey to assess the validity and reliability of the General Health Questionnaire-12. While validity and reliability testing was not explicitly carried out on secretaries, the scale has demonstrated reliability and validity in population screening and research within broad groups. It is noteworthy that GSA12 produced superior outcomes in comparison to GSA28. Despite its brevity, its outstanding reliability will make it the chosen choice. It comprises 12 questions. Each question inquires about symptoms experienced in the past several weeks and is presented in a four-point Likert scale format. There are two scoring systems used to determine the total score. The initial scoring method assigns a value of 0 to the first two options and 1 to the last two options, with the total score being the sum of all items. The highest achievable score is 12. Researchers in the literature established the cutoff score for the General Health Questionnaire-12 as 1–2. Individuals scoring two or higher were deemed in need of psychological evaluation. The second scoring method assigns the values 0, 1, 2, and 3 to four alternatives. The highest achievable score is 36. Higher scores suggest a higher incidence of mental health problems.¹⁵

The Bournemouth Neck Questionnaire was derived from the Bournemouth Low Back Pain Questionnaire by Bolton et al in 2002. The questionnaire evaluates the severity of pain, daily social functioning, levels of anxiety and depression, fear of movement due to pain, and the ability to manage discomfort related to neck pain. The evaluation focuses on the intensity of symptoms encountered over the previous week rather than the individual's current condition. The questionnaire has seven questions, with responses rated on a numerical analog scale from 0 to 10. The highest achievable score is 70. A high score signifies a significant degree of disability. The Bournemouth Neck Questionnaire has been accurately translated into Turkish and has demonstrated validity and reliability. It is applicable for academic study across many populations.¹⁶

The study variables included gender, age, marital status, education level, unit of employment, working hours, obesity, neck exercise, chair adjustability, tool and equipment accessibility, need for psychological evaluation, presence of neck pain, and level of disability from neck pain.

The research was carried out in adherence to the guidelines outlined in the Declaration of Helsinki, and it received approval from the Gazi University Ethics Commission on 04/10/2022. Participants' informed consent was acquired, and data was gathered in November 2022.

Since the study was completed within a month, the impact of seasonal variations on psychological well-being is reduced. The researcher conducted face-to-face interviews with hospital secretaries at their workplace to fill out the surveys. A face-to-face interview was selected for its ability to ensure high participation rates, correct responses, and the opportunity for researchers to clarify questions if needed. The survey has a duration of 6–8 minutes.

Statistical analyses were conducted using the Statistical Package for Social Science for Windows 23.0. Numbers and percentages were used to express categorical variables, whereas mean, standard deviation, and median (minimum–maximum value) were utilized for presenting numerical variables. The Pearson chi-square test was used to compare categorical variables in the studies. The normality of the variables was assessed using Kolmogorov–Smirnov and Shapiro–Wilk tests. Due to the absence of normal distribution conformity, the Mann–Whitney *U*-test was utilized to determine whether or not there is a difference between the two groups' means. Spearman's rank correlation was utilized to assess the linear association between the variables and the strength of this association. The level of statistical significance is $p < 0.05$.

Results

Three hundred fifty-four hospital secretaries took part in the study. There is a significant, positive, and moderate correlation between the frequency of mental health issues and the amount of neck pain disability, as indicated by the scores of the General Health Questionnaire-12 and the Bournemouth Neck Pain Questionnaire ($r=0.481$; $p<0.001$).

Table 1 displays the age, employment duration, daily desk work hours, and body-mass index of hospital secretaries.

Tables 2 and 3 indicate hospital secretaries' sociodemographic characteristics and working conditions. 34.3% of hospital secretaries experienced neck pain, and 26.3% needed psychological evaluation (Table 2). 63.3% of the hospital secretaries did not perform neck exercises throughout the research period. 44.4% found the chair to be non-adjustable to their preferred position (Table 3).

In the past week, neck pain was 42.4% among women, 46.5% among individuals with non-adjustable chairs, 56.4% among those with inaccessible equipment, and 54.8% among those needing a psychological evaluation. Statistically significant differences ($p<0.05$) were found in the occurrence of neck pain in the last week based on gender, chair adjustability, equipment accessibility, and the necessity for psychological evaluation (Table 4).

Participants who performed neck stretching exercises during the working hours had a lower mean score on the General Health Questionnaire-12 (7.80 ± 4.82 points) compared to those who did not (9.33 ± 5.06 points). Men had a mean score of 11.49 ± 14.53 points, which was lower than the mean score of women at 18.68 ± 16.62 points. Participants who could adjust their chairs to their preferred position had a mean score of 12.91 ± 14.52 points, which was lower than those who could not at 20.18 ± 17.43 points. Similarly, individuals whose equipment was easily accessible had a mean score of

Table 1 Descriptive Characteristics of the Participants, Turkey, 202

	Mean \pm SD	Min-Max
Age (years)	42.40 \pm 8.43	24–64
Employment duration (years)	16.70 \pm 8.44	1–8
Daily desk work time (hours)	7.64 \pm 1.86	6–10
Body-mass index (kg/m ²)	26.31 \pm 4.38	14.81–43.28

Table 2 Demographic Characteristics of the Participants, Turkey, 2022

	Number	Percentage
Gender (n=354)		
Female	229	64.7
Male	125	35.3
Age (n=354)		
under 30 years old	22	6.2
30–39 years	109	30.8
40–49 years	149	42.1
50 years and older	74	20.9
Marital status (n=354)		
Married	255	72.0
Single	55	15.6
Divorced/Widowed	44	12.4
Educational status (n=354)		
High school graduate	130	36.7
Junior college graduate	104	29.7
University graduate	113	31.9
Master's/PhD graduate	6	1.7
Body mass index (n=354)		
Weak	7	2.0
Normal	125	35.3
Pre-obese	159	44.9
Obese	63	17.8
GHQ-12 survey		
Psychological evaluation required	93	26.3
Psychological evaluation not required	261	73.7
Neck pain (n=354)		
Yes	123	34.6
No	231	65.4

14.83±15.48 points, lower than those whose equipment was not as accessible at 23.24±18.57 points on the Bournemouth Neck Pain Questionnaire Scale. All the differences observed were statistically significant at a significance level of $p<0.05$, as shown in Table 5.

In light of our findings, a significant number of hospital secretaries had neck pain and needed psychological evaluation. It was found that hospital secretaries, most of whom do not perform neck exercises during working hours, worked in non-ergonomic conditions. In addition, the scales we applied to hospital secretaries have a positive and moderate correlation.

Table 3 Work-Related Characteristics of the Participants, Turkey, 2022

	Number	Percentage
Working unit (n=354)		
Outpatient room	157	44.4
Administrative units	82	23.2
Clinic	61	17.2
Laboratory	21	5.9
Operating room/Intensive care	20	5.6
Other *	13	3.7
Duration of work at the hospital (n=354)		
Less than 5 years	33	9.3
5–9 years	37	10.5
10–14 years	89	25.1
15–19 years	47	13.3
20–24 years	82	23.2
25 years and above	66	18.6
Daily working time at desk (n=354)		
Less than 8 hours	71	20.0
8 hours	213	60.2
More than 8 hours	70	19.8
Neck exercises during work (n=354)		
Yes	130	36.7
No	224	63.3
Height adjustable chair (n=354)		
Yes	197	55.6
No	157	44.4
Easily accessible tools (n=354)		
Yes	299	84.5
No	55	15.5

Notes: *Other: Call center, cafeteria, pharmacy, warehouse, blood bank.

Discussion

The study involved hospital secretaries employed at the largest university hospital in Ankara, the capital of Turkey. Many hospital secretaries suffer from neck pain and are exposed to workplace ergonomic hazards. There is a relationship between neck pain and psychological evaluation requirement, and regular neck exercises can improve overall mental well-being.

Table 4 Presence of Neck Pain in the Last Week by Some Characteristics of the Participants, Turkey, 2022

	Neck Pain in the Last Week			
	Yes (%)	Yes (n)	No (%)	No (n)
Gender (n=354)				
Female (n=229)	97	42.4	132	57.6
Male (n=125)	26	20.8	99	79.2
	p<0.001*			
Age (n=354)				
40 years and younger (n=141)	47	33.3	94	66.7
41 years and older (n=213)	76	35.7	137	64.3
	p=0.650			
Obesity (n=354)				
Not obese (n=291)	100	34.4	191	65.6
Obese (n=63)	23	36.5	40	63.5
	p=0.746			
Marital status (n=354)				
Married (n=255)	84	32.9	171	67.1
Not married (n=99)	39	39.4	60	60.6
	p=0.252			
Educational status (n=354)				
High school and below (n=130)	42	32.3	88	67.7
Junior college and above (n=224)	81	36.2	143	63.8
	p=0.463			
Duration of work at the hospital (n=354)				
less than 10 years (n=70)	20	28.6	50	71.4
10 years or more (n=284)	103	36.3	181	63.7
	p=0.226			
Daily working time at desk (n=354)				
8 hours or less (n=284)	97	34.2	187	65.8
more than 8 hours (n=70)	26	37.1	44	62.9
	p=0.638			
Neck exercise during work (n=354)				
No (n=224)	82	36.6	142	63.4
Yes (n=130)	41	31.5	89	68.5

(Continued)

Table 4 (Continued).

	Neck Pain in the Last Week			
	Yes (%)	Yes (n)	No (%)	No (n)
	p=0.334			
Height adjustable chair (n=354)				
No (n=157)	73	46.5	84	53.5
Yes (n=197)	50	25.4	147	74.6
	p<0.001*			
Easily accessible tools (n=354)				
No (n=55)	31	56.4	24	43.6
Yes (n=299)	92	30.8	207	69.2
	p<0.001*			
Psychological evaluation requirement (n=354)				
No (n=261)	72	27.6	189	74.4
Yes (n=93)	51	54.8	42	45.2
	p<0.001*			

Notes: * Statistically significant, p<0.05.

Neck pain was reported by almost one-third of the hospital secretaries in our study. Our research indicates that women have neck pain at a rate more than double that of men. In a study conducted in Sri Lanka, individuals who spent most of their working hours sitting experienced more neck pain than the control group.⁸ A study in Belgium examined risk factors for neck pain among office workers. About half of participants reported experiencing neck discomfort in the past year, and over half of those with neck pain said it began during their present job.¹⁷ A higher prevalence of chronic neck pain was observed in women compared to men, according to a study conducted in Spain.¹⁸ Other studies suggest that female employees are more susceptible to neck pain than males.^{19,20} Regional mobility restrictions experienced by hospital secretaries from prolonged computer usage may be associated with a higher incidence of neck pain. Women may experience a higher prevalence of neck pain due to varying ergonomic requirements, hormonal fluctuations, or possible underreporting by men.

Approximately three-quarters of the hospital secretaries did not exercise neck while working. A frequency of this magnitude is considerable. Participants who did not engage in neck stretching activities during work had higher average scores on the General Health Questionnaire-12. A research in Turkey found that 77.8% of participants did not engage in neck, back, or shoulder exercises during rest breaks.²¹ In a study of individuals who work on a computer for over six hours a day, 35.9% did not engage in neck exercises.²² A study conducted in Greece found that those who engaged in deep neck flexor muscle workouts had a reduction in levels of anxiety and despair.²³ Other research suggests that exercises to enhance flexibility and strengthen neck muscles may positively affect depression, stress, and anxiety.²⁴⁻²⁶ In Turkey, the frequency of physical activity is comparatively infrequent. Healthcare personnel in our study may have required adequate physical activity because of their hectic schedules. Regular physical activity can decrease pain and the emotional stress associated with pain. Exercise can decrease stress by promoting relaxation and mindfulness, potentially decreasing the occurrence of mental diseases.

Half of the hospital secretaries in the study who did not utilize adjustable chairs and more than half whose instruments were not within reach reported experiencing neck pain. Various studies have identified a correlation between computer work, improper posture, cervical muscle exhaustion, and the onset of work-related neck pain.²⁷⁻²⁹ A study involving

Table 5 General Health Questionnaire-12 and Bournemouth Neck Pain Questionnaire Scores by Some Characteristics of the Participants, Turkey, 2022

		General Health Questionnaire-12					Bournemouth Neck Pain Questionnaire				
		M**	SD**	MR**	U**	p**	M**	SD**	MR**	U**	p**
Gender (n=354)	Female (n=229)	9.00	5.03	183.64	12,906.0	0.125	18.68	16.62	195.41	10,211.0	<0.001*
	Male (n=125)	8.34	5.01	166.25			11.49	14.53	144.69		
Age (n=354)	40 years and younger (n=141)	8.99	4.71	183.87	14,118.5	0.339	14.95	14.61	173.28	14,421.0	0.526
	41 years old and older (n=213)	8.62	5.22	173.28			16.92	17.26	180.30		
Body mass index (n=354)	Not overweight (n=132)	9.39	5.25	189.69	13,043.5	0.083	17.64	16.06	190.56	12,928.5	0.063
	Overweight (n=222)	8.40	4.85	170.25			15.24	16.35	169.74		
Marital status (n=354)	Married (n=255)	8.55	4.79	173.71	11,655.5	0.262	15.21	15.88	171.12	10,996.0	0.059
	Not married (n=99)	9.32	5.55	187.27			18.54	17.05	193.83		
Graduation (n=354)	High school (n=130)	8.55	5.19	171.44	13,772.0	0.394	15.82	17.24	172.38	13,895.0	0.472
	Higher education (n=224)	8.89	4.93	181.02			16.33	15.71	180.47		
Working time (n=354)	15 years or less (n=207)	8.92	5.27	179.65	15,243.5	0.679	17.02	17.55	179.67	15,241.0	0.677
	more than 15 years (n=321)	8.59	4.75	175.17			15.19	14.74	175.15		
Neck exercises (n=354)	No (n=224)	9.33	5.06	190.84	11,572.0	0.001*	17.16	16.66	183.38	13,243.5	0.154
	Yes (n=130)	7.80	4.82	154.52			14.38	15.52	167.37		
Height adjustable chair (n=354)	No (n=157)	9.25	4.96	189.25	13,619.0	0.053	20.18	17.43	202.94	11,470.5	<0.001*
	Yes (n=197)	8.38	5.05	168.13			12.91	14.52	157.23		
Easily accessible tools (n=354)	No (n=55)	9.53	6.03	187.35	7680.5	0.436	23.24	18.57	220.69	5847.0	0.001*
	Yes (n=299)	8.63	4.81	175.69			14.83	15.48	169.56		

Notes: Mann–Whitney U-test was used to conduct the statistical analysis. *Statistically significant, $p < 0.05$. **M, Average.

Abbreviations: SD, Standard deviation; MR, Rank mean; U, Mann–Whitney U value; p, probability value.

sewing machine operators in the United States found that an enhancement in the ergonomic characteristics of the chair led to a reduction in neck pain.³⁰ A study in Thailand found that frequent trunk bending while employment is associated with an increased likelihood of neck pain symptoms.³¹ A study conducted in Turkey found that three-quarters of employees experienced neck pain due to the lack of a proper ergonomic work environment.³² In this research, neck pain was more common among hospital secretaries who lacked ergonomic working conditions.

This highlights the need for ergonomic workplace setups for this particular occupational group. Based on the General Health Questionnaire-12 scoring, almost a quarter of the hospital secretaries in our sample needed psychological evaluation. In Turkey, the prevalence of depression in the general population is from 10% to 20%.³³ A study conducted in Turkey assessed the prevalence of depression among university hospital personnel and found it to be 11.3%.³⁴ Secretaries with full-time employment exhibited considerably higher levels of depression compared to other women in another research.³⁵ The elevated occurrence can be seen in combination with hospital secretaries experiencing stress and being subjected to insults, threats, and violence.

More than half of the hospital secretaries in our study who experienced neck pain had higher scores on psychological evaluation requirement. Correlations between General Health Questionnaire-12 and Bournemouth Neck Pain Questionnaire Scale scores were examined. A statistically significant connection was found between the requirement for psychological evaluation and neck pain ($p < 0.001$). A study conducted in seventeen countries found that those with back/neck discomfort are more likely to have mental illnesses compared to those without.³⁶ Neck discomfort can be linked to mental health problems such as anxiety, depression, stress, mood disorder, and cognitive processes.³⁷ A study conducted in the United States revealed that neck pain had a detrimental impact on the quality of life of hospital secretaries and was linked to mental health problems.³⁸ Chronic pain in individuals can lead to insomnia, depression, and anxiety. Psychiatric issues might reduce tolerance and worsen pain symptoms. Measures can be implemented to enhance the mental well-being of medical secretaries and alleviate neck pain. Precautions can involve stretching exercises, maintaining proper sitting posture, and taking frequent breaks.

One of the study's limitations is that the height and body weight data were collected solely from the statements provided by the hospital secretaries. Accordingly, obesity-related outcomes are not addressed. Furthermore, a portion of the population was inaccessible due to high job demands, taking a vacation, being on sick leave, or declining to participate in the study. The study had a high participation rate of 82.9% and evaluated mental health status and neck pain levels using suitable methods. It enabled the analysis of outcomes from many viewpoints and offered a thorough evaluation.

Despite the existing information, further investigation on the relationship between neck discomfort and mental status in hospital secretaries is needed. The relationship between neck discomfort and mental state is intricate, and further investigation is required to determine causality. The extensive research can offer a more profound insight into enhancing healthcare workers' working environment and quality of life.

Conclusion

Our research revealed that the working conditions of hospital secretaries needed to be more ergonomically favorable. Neck pain was more frequent and severe in hospital secretaries working in non-ergonomic environments. The majority of the secretaries neglected neck exercises despite prolonged sitting. Furthermore, a considerable amount of hospital secretaries required psychological evaluation. Our research highlights the need to investigate hospital secretaries regarding occupational health and safety and the necessity of implementing measures to enhance the working conditions of personnel in this profession. Enhancing ergonomic working conditions, promoting regular exercise programs, and offering psychosocial support services can benefit hospital secretaries' health and work performance. Possible ergonomic enhancements for the workplace involve implementing methods to enhance the comfort and well-being of employees, such as designing office furniture ergonomically, providing height-adjustable workstations, and using ergonomic keyboards and mouse. An ergonomic and health-focused work environment can enhance labor efficiency, decrease error rates, improve job satisfaction. Implementing holistic strategies for occupational health in hospitals can hospital and secretaries, and promote better workplace health.enhance healthcare workers' motivation, particularly

Data Sharing Statement

The datasets generated and analyzed during the current study are not publicly available because the data is confidential patient data but are available from Volkan Medeni upon reasonable request.

Ethics Statement

The Institutional Ethics Committee of the Gazi University approved this study, and it was conducted by the Declaration of Helsinki. All participants provided written informed consent.

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The authors report no conflicts of interest in this work.

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