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AWARENESS OF CORRECT SITTING POSTURE AND CONSEQUENCES OF UNHEALTHY POSTURE AMONG MEDICAL STAFF: A CROSS-SECTIONAL STUDY

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ABSTRACT

Objective: This research aims to determine the Awareness of Correct Sitting Posture and the Consequences of Unhealthy Posture among Medical Staff.

Methods: The study will be conducted in selected hospitals and healthcare centers across KSA, encompassing internal medicine, surgery, and outpatient care departments, where medical staff frequently engage in desk-based work.

Results: The study included 260 participants. The most frequent gender among them was female (n= 148, 56.9%) and male (n= 112, 43.1%). The most frequent age among study participants was 31-35 years (n= 82, 31.5%) followed by more than 40 years (n= 55, 21.2%), then 25-30 years (n=49, 18.8%), 36-40 years (n=47, 18.1%), and less than 25 years (n=27, 10.4%). The most frequent nationality among study participants was Saudi (n= 202, 77.7%) and non-Saudi (n= 58, 22.3%). The experience among study participants with most of them 6-10 years (n=121, 46.5%), followed by 10 years and more (n=99, 38%), then 5 years or less (n=40, 15.3%).

Conclusion: This study highlights a high level of awareness regarding correct sitting posture among medical staff, as evidenced by the high percentage of participants adhering to proper

ergonomic practices. However, the findings emphasize the need for ongoing education and intervention strategies to address specific areas where compliance can be improved, such as using lumbar support and avoiding prolonged static postures. The results underscore the importance of implementing workplace ergonomic programs to promote musculoskeletal health and prevent posture-related issues.

INTRODUCTION

Misaligned body parts may put strain on the spinal cord and girdles (scapular and pelvic), leading to aches and pains in the muscles and joints [1,2,3]. Important as it is, the issue of posture may also impact employees and students [4,5,6,7]. Postural weakness manifests as slouching, a hollow back, or an anti-verse pelvis in 25-60% of youths [8,9,10]. However, future problems may be prevented with an early posture examination and a personalized training program [11].

Measuring the prevalence of postural dysfunctions is incredibly challenging due to the multitude of factors that can affect posture. Additionally, the populations studied in these studies are rarely representative of the general population; for example, studies involving school populations, employees, and health care workers all have different characteristics [12,13,14]. However, the concept of proper posture is particularly relevant in the context of pre-teen kids in the classroom. A task force found that students' backaches were associated with their school backpacks being too heavy, thus they suggested a curriculum change to reduce bag weight [7,15]. In light of the prevalence of prolonged computer usage, the issue of proper posture also gains prominence [6,16]. Computer usage is associated with musculoskeletal diseases, according to a literature study [16]. Based on the results of a questionnaire survey of 1,428 workers, the following problems were most common at 12 months, broken down by body area: neck and head (42%), lower back (34%), upper back (28%), wrists and hands (20%), shoulders (16%), ankles and feet (13%), knees (12%), hips (6%), and elbows (5%). A study of 2431 workers using video display terminals found that the shoulder-neck area had the highest prevalence of musculoskeletal problems at 18%, followed by the lumbar region at 14.8%, and the upper limb region at 21.7% [17].

Several studies have used radiography, inclinometers, electronic goniometers, photos, and the photogrammetric approach to determine proper posture [18,19,20,21,22]. A deep learning technique was used to create smart seats for kids with the goal of better posture [23]. The chairs are powered by convolutional neural networks. The degree to which the individuals' heads were forward in a sitting and standing position was measured in a case control study by taking pictures of their sagittal planes [22]. In order to analyze the posture of one hundred and ten youngsters, the photogrammetric approach with a moiré effect was used using the Mora 4G CQ Elektronik device [20]. Using inclinometers, one research tracked crane operators' neck position throughout two hours of work [18]. Researching angular displacements in the cervical spine and lower back is another possible use of electronic goniometers [21]. The associations between forward head posture and lumbar-pelvic sagittal alignment in older individuals with lower back pain were studied using standardized lateral planar radiographs taken while the complete spine was in a neutral standing position [19].

In order to learn more about how to stand up straight, some writers have employed surveys. According to studies conducted on the literature, actions are shaped by one's knowledge, attitudes, or the interplay between the two [24]. Actually, a number of research [25,26,27,28] examine

behaviors based on knowledge and attitudes rather than perfect bodily position. The benefits of using the KAP survey approach to address posture issues are particularly clear. By using the KAP survey methodology, one may ascertain whether or not a population's level of knowledge influences their attitudes, which in turn impact their actions (here defined as adhering to proper posture or experiencing musculoskeletal diseases). No one who has taken the posture-related surveys has done so in a way that takes into account knowledge, attitudes, and behaviors all at once; the sole exception is one that takes into account knowledge and behaviors (here, meaning practices) but not attitudes [29-30].

METHODS

Study design

This study will utilize a cross-sectional design to assess the awareness of correct sitting posture and the consequences of unhealthy posture among medical staff. Data will be collected at a single time to capture a snapshot of the current posture-related awareness and behaviors within the healthcare workforce.

Study approach

The study will be conducted in selected hospitals and healthcare centers across KSA, encompassing internal medicine, surgery, and outpatient care departments, where medical staff frequently engage in desk-based work.

Study population

The target population will include medical staff such as doctors, nurses, and administrative healthcare workers who spend a significant portion of their working hours sitting.

Study sample

The sample size will be determined based on the total population. It will be selected using a stratified random sampling technique to ensure representation from various departments and job roles within the medical staff. Participants will be randomly chosen from eligible staff lists, ensuring that individuals from different specializations and experience levels are included.

Study tool

The questionnaire was adopted for data collection for the current study, which was also categorized as a study tool.

Data collection

Data will be collected through a structured self-administered questionnaire distributed to the participants. The questionnaire will include demographic information, knowledge of correct sitting

posture, awareness of the consequences of unhealthy posture, and personal experiences of posture-related health issues.

Data analysis

Data will be analyzed using SPSS software. Descriptive statistics (mean, frequency, and percentages) will summarize the data. Chi-square tests and t-tests will examine the relationship between posture awareness and reported health outcomes. A p-value of <0.05 will be considered statistically significant.

Ethical considerations

Ethical approval for the study will be obtained from the Institutional Review Board (IRB) of the healthcare facilities involved. All participants will be informed of the study's purpose, and written informed consent will be obtained before participation. Confidentiality and anonymity will be maintained throughout the research, and participants will have the right to withdraw from the study at any time without any consequences.

RESULTS

The study included 260 participants. The most frequent gender among them was female (n= 148, 56.9%) and male (n= 112, 43.1%). Figure 1 shows the gender distribution among study participants. The most frequent age among study participants was 31-35 years (n= 82, 31.5%), followed by more than 40 years (n= 55, 21.2%), then 25-30 years (n=49, 18.8%), 36-40 years (n=47, 18.1%), and less than 25 years (n=27, 10.4%). Figure 2 shows the age distribution among study participants. The most frequent nationality among study participants was Saudi (n= 202, 77.7%) and non-Saudi (n= 58, 22.3%). Figure 3 shows the distribution of nationality among study participants.

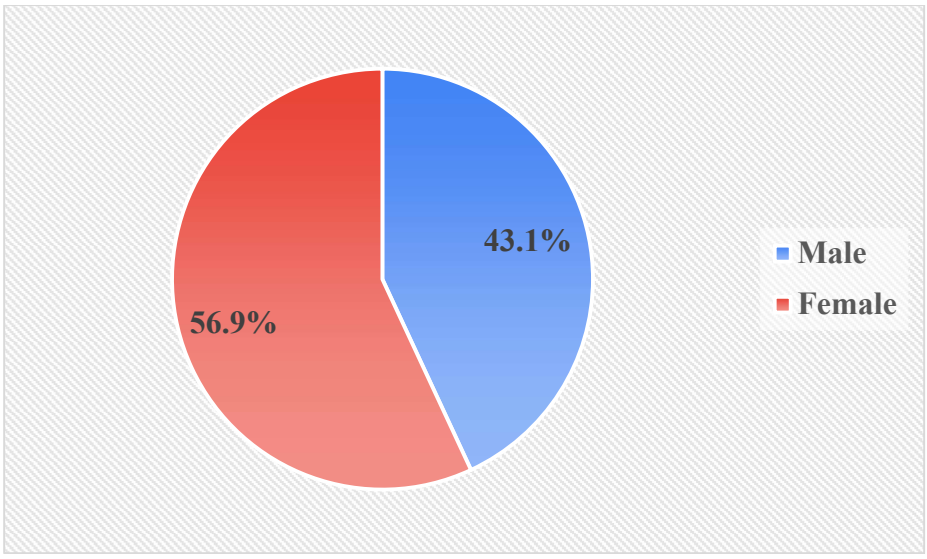

Figure 1: gender distribution among study participants

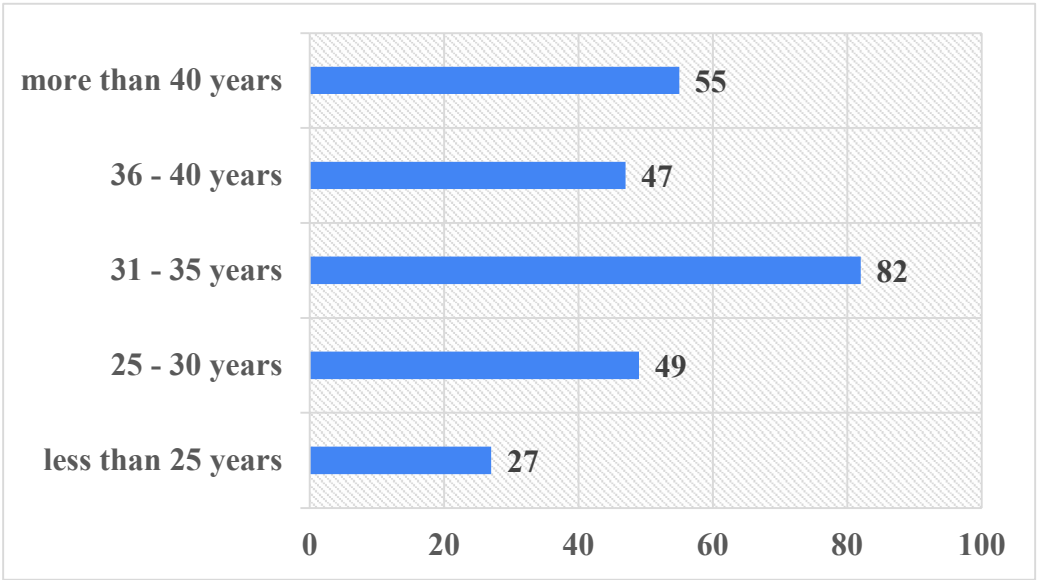

Figure 2: Age distribution among study participants

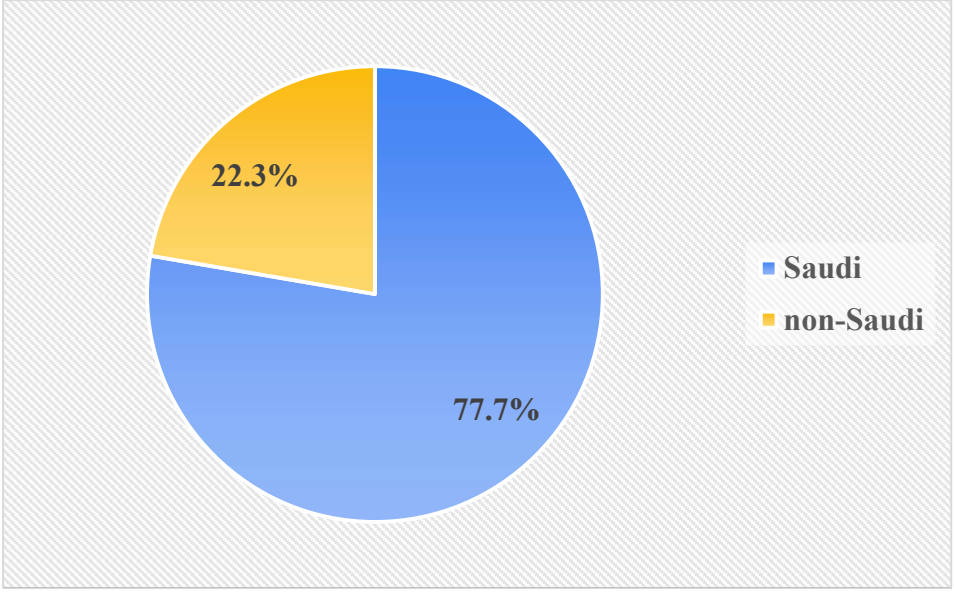

Figure 3: Nationality distribution among study participants

The experience among study participants with most of them 6-10 years (n=121, 46.5%) followed by 10 years and more (n=99, 38%), then 5 years or less (n=40, 15.3%). Figure 4 shows the experience distribution among study participants.

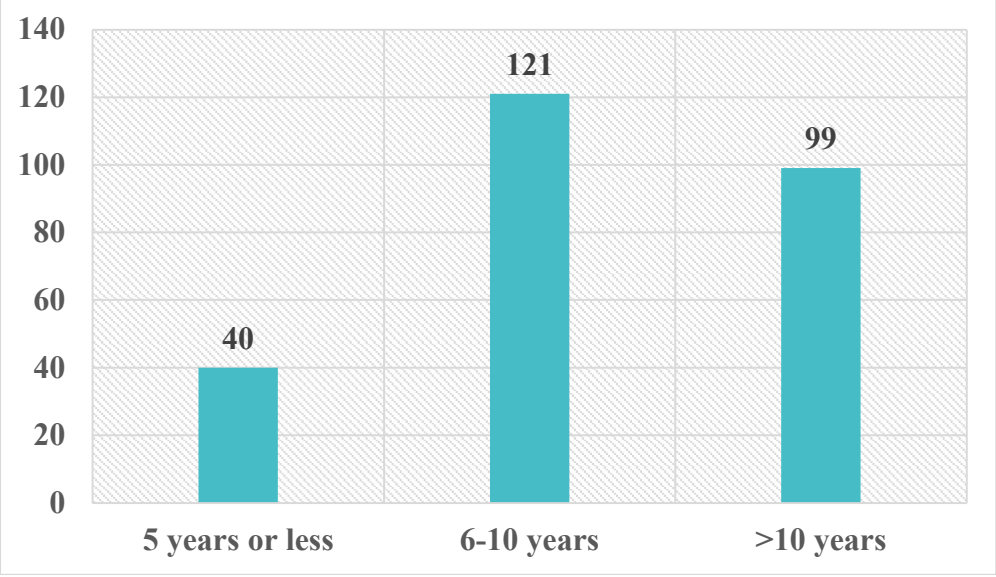

Figure 4: Experience distribution among study participants

Participants were asked about their awareness of the Sitting Posture. Their responses and results are presented in Table 1.

Table 1: Awareness of the Sitting Posture

Item	Agree	Neutral	disagree
I sit with my back straight against the chair while working.	244 (93.8%)	11 (4.2%)	5 (1.9%)
I ensure my feet are flat on the floor when seated.	246 (94.6%)	10 (3.8%)	4 (1.5%)
I adjust my chair height so that my knees are at a 90-degree angle.	239 (91.9%)	13 (5%)	8 (3.1%)
I avoid slouching or leaning forward while sitting for long periods.	248 (95.4%)	8 (3.1%)	4 (1.5%)
I keep my computer screen at eye level to avoid bending my neck.	246 (94.6%)	10 (3.8%)	4 (1.5%)
I use a lumbar support cushion or adjust my chair to support my lower back.	240 (92.3%)	14 (5.4%)	6 (2.3%)
I sit with my shoulders relaxed and not raised while working.	237 (91.2%)	18 (6.9%)	5 (1.9%)
I avoid crossing my legs when sitting for extended periods.	238 (91.5%)	16 (6.2%)	6 (2.3%)
I maintain a slight gap between the back of my knees and the chair.	240 (92.3%)	13 (5%)	7 (2.7%)
I sit with my thighs parallel to the floor.	240 (92.3%)	16 (6.2%)	4 (1.5%)
I take breaks regularly to stand and stretch during long sitting sessions.	244 (93.8%)	12 (4.6%)	4 (1.5%)
I adjust my chair to ensure my hips are slightly above my knees.	238 (91.5%)	14 (5.4%)	8 (3.1%)

I avoid twisting or turning my body awkwardly while seated.	236 (90.8%)	16 (6.2%)	8 (3.1%)
I sit with my elbows close to my body and at a 90-degree angle.	239 (91.9%)	14 (5.4%)	7 (2.7%)
I avoid sitting in the same position for prolonged periods.	237 (91.2%)	15 (5.8%)	8 (3.1%)
I sit with my weight evenly distributed on both hips.	242 (93.1%)	10 (3.8%)	8 (3.1%)
I adjust my seat to provide adequate support for my thighs.	238 (91.5%)	14 (5.4%)	8 (3.1%)
I keep my head aligned with my spine while sitting.	234 (90%)	17 (6.5%)	9 (3.5%)
I use armrests to reduce strain on my shoulders while seated.	238 (91.5%)	16 (6.2%)	6 (2.3%)
I avoid bending forward to reach objects while sitting.	242 (93.1%)	14 (5.4%)	4 (1.5%)

DISCUSSION

Modern office workers spend as much as seventy-five percent of their day seated, with more than fifty percent of that time spent in long, almost motionless stretches [31]. Rapid technological development, especially in the realm of electronic gadgets, has an effect on workers. Jobs used to need physical exertion but now require more sitting due to the nature of modern office employment [32]. Activities that are characterized by low energy expenditure and typically include extensive periods of resting are known as sedentary habits. Both inactive lifestyle choices and long periods spent in front of screens contribute to the epidemic of musculoskeletal ailments that plague office workers [33]. One element that is seen to be adding to this worry is the transition from paper-based to computer-based work. The typical worker in a desk job sits for nine and a half hours per day, according to research. The average American sits for 8.07 hours per day while they are not working [34]. The prevalence of sedentary lifestyles is on the rise in the modern world. World Health Organization estimates put the percentage of individuals who do not get adequate exercise anywhere from 60% to 85% [35]. As a result of the pandemic, the proportion of teleworkers has risen dramatically, according to a European poll [36]. This number has jumped from 10% in most European nations to more than 50%. Nearly half of all adults(44%) in an Australian National Health Survey from 2018 said they sat for most of their workday [37]. The majority of urban desk-

based workers in other high-income countries are very sedentary, according to research [38]. On average, these workers spend 77% of their waking hours sitting at a desk.

Posture refers to the alignment of the spine and its supporting components. Good posture allows a person to keep their spine in a neutral position whether sitting, standing, or lying down. When sitting correctly, you should maintain your arms at a natural, relaxed position, your spine in a neutral position, and your legs flat on the floor, with your knees bent and your feet hip-width apart. The ISO 11226-2000 worldwide standard for assessing ergonomic characteristics of working postures [39] states that the sitting position involves four main body parts: the trunk, the head, the upper and lower extremities, and the sitting position itself. The ideal posture is an upright stance, since it reduces the need to compensate in the back and equally distributes weight on the hips [40]. When you stand incorrectly, you put unnecessary pressure on your spinal discs and back muscles, which may cause aches and pains in your lower and upper back. Neck discomfort, stiffness, and headaches are common side effects of sitting with a cocked head for long periods of time. In addition to causing edema, numbness, and tingling, it may reduce blood flow to the lower extremities [41]. The muscles in the shoulders might become strained and painful by slouching or hunching forward [42,43].

Approximately 470,000 employees in the United Kingdom had musculoskeletal disorders as a result of their occupations in 2021, according to the Health and Safety Executive. In around 166,000 instances, the lower limbs are affected (16%), in about 212,000 cases, the upper limbs or neck are affected (45%), and in about 182,000 cases, the back is affected (39%). More than 2.34 million people die each year as a result of illnesses or injuries sustained on the job. Asians had the greatest rate of work-related deaths (65%), followed by Africans (11.8%) and Europeans (11.7%) [44]. The majority of occupational illnesses in the United States are musculoskeletal disorders, which affect millions of computer workers. With an estimated $380.9 billion in 2016, these musculoskeletal illnesses were the leading cause of healthcare expenditures [45].

Having good posture is essential to a person's health and wellness. A healthy movement system is reflected in an ideal upright posture, which is thought of as a representation of musculoskeletal well-being [46]. Muscles, ligaments, and joints are less likely to experience strain when the body is in an upright position, with the spine curving in its natural curves and the other joints and muscles balanced. The good news is that there are a plethora of options for improving one's posture and general health. The most effective treatment is education on proper posture; if individuals are aware of what constitutes excellent posture, they are more likely to intentionally cultivate it in their everyday lives [47]. Another way to keep from slouching when sitting is to set an alarm or reminder to get up and walk about every so often, switch postures, and stretch every so often [48]. Better sitting habits may be promoted and the risk of posture-related disorders can be decreased by including reminders into routines. Workplace and everyday activity ergonomic changes may also play a big role in correcting posture. As an example, you should use cushions and seats that support your back and neck, and you should get up from your desk and move about every so often [49,50]. Modern information technology and sensor advancements have made it possible to create monitoring systems that track and improve sitting posture in real time. Through the use of pressure sensors integrated into the seat and backrest, these devices are able to identify when a person is sitting too much and then prompt them to sit up straight. Ergonomic posture training reduced musculoskeletal risk over 16 months, according to research by Robertson et al. [49]. Studies [50] and [51] have also shown that ergonomic adjustments help alleviate aches and pains caused by

musculoskeletal diseases. Utilizing a camera to portray the sagittal posture of sitting persons reduced posture-related hazards after three weeks, according to Taieb-Maimon et al. [52].

CONCLUSION

This study highlights a high level of awareness regarding correct sitting posture among medical staff, as evidenced by the high percentage of participants adhering to proper ergonomic practices. However, the findings emphasize the need for ongoing education and intervention strategies to address specific areas where compliance can be improved, such as using lumbar support and avoiding prolonged static postures. The results underscore the importance of implementing workplace ergonomic programs to promote musculoskeletal health and prevent posture-related issues.

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ANNEX 1: DATA COLLECTION TOOL

Age (years)		**Gender**	Male	Female
Professional level	General Practitioner	Resident	Specialist	Consultant
Others	Nurse	Health Allied Professional		
Pharmacy	Laboratory	Paramedic		
Experience	=<5 years	6-10 years	>10 years	
Nationality	Saudi / Non-Saudi	**Working hours per week**		

Awareness about Sitting Posture

Item	Agree	Neutral	disagree
I sit with my back straight against the chair while working.			
I ensure my feet are flat on the floor when seated.			
I adjust my chair height so that my knees are at a 90-degree angle.			
I avoid slouching or leaning forward while sitting for long periods.			
I keep my computer screen at eye level to avoid bending my neck.			
I use a lumbar support cushion or adjust my chair to support my lower back.			
I sit with my shoulders relaxed and not raised while working.			
I avoid crossing my legs when sitting for extended periods.			
I maintain a slight gap between the back of my knees and the chair.			
I sit with my thighs parallel to the floor.			
I take breaks regularly to stand and stretch during long sitting sessions.			
I adjust my chair to ensure my hips are slightly above my knees.			
I avoid twisting or turning my body awkwardly while seated.			
I sit with my elbows close to my body and at a 90-degree angle.			
I avoid sitting in the same position for prolonged periods.			
I sit with my weight evenly distributed on both hips.			
I adjust my seat to provide adequate support for my thighs.			
I keep my head aligned with my spine while sitting.			
I use armrests to reduce strain on my shoulders while seated.			

I avoid bending forward to reach objects while sitting.			

APPENDIX 2: Participants responses to scale items

Gender

		Frequency	Percent
Valid	Male	112	43.1
	Female	148	56.9
	Total	260	100.0

Age

		Frequency	Percent
Valid	less than 25 years	27	10.4
	25 - 30 years	49	18.8
	31 - 35 years	82	31.5
	36 - 40 years	47	18.1
	more than 40 years	55	21.2
	Total	260	100.0

Nationality

		Frequency	Percent
Valid	Saudi	202	77.7
	non-Saudi	58	22.3
	Total	260	100.0

Professional level

		Frequency	Percent
Valid	Internship	23	8.8
	General Practitioner	20	7.7
	Resident	18	6.9
	Specialist	39	15.0
	Consultant	36	13.8
	Nurse	21	8.1
	Pharmacy	31	11.9
	Laboratory	34	13.1
	Health Allied Professional	33	12.7
	other	5	1.9
	Total	260	100.0

Experience

		Frequency	Percent
Valid	5 years or less	40	15.4
	6-10 years	121	46.5
	>10 years	99	38.1
	Total	260	100.0

awareness of the Sitting Posture			
Item	Agree	Neutral	disagree
I sit with my back straight against the chair while working.	244 (93.8%)	11 (4.2%)	5 (1.9%)
I ensure my feet are flat on the floor when seated.	246 (94.6%)	10 (3.8%)	4 (1.5%)
I adjust my chair height so that my knees are at a 90-degree angle.	239 (91.9%)	13 (5%)	8 (3.1%)
I avoid slouching or leaning forward while sitting for long periods.	248 (95.4%)	8 (3.1%)	4 (1.5%)
I keep my computer screen at eye level to avoid bending my neck.	246 (94.6%)	10 (3.8%)	4 (1.5%)
I use a lumbar support cushion or adjust my chair to support my lower back.	240 (92.3%)	14 (5.4%)	6 (2.3%)
I sit with my shoulders relaxed and not raised while working.	237 (91.2%)	18 (6.9%)	5 (1.9%)
I avoid crossing my legs when sitting for extended periods.	238 (91.5%)	16 (6.2%)	6 (2.3%)
I maintain a slight gap between the back of my knees and the chair.	240 (92.3%)	13 (5%)	7 (2.7%)
I sit with my thighs parallel to the floor.	240 (92.3%)	16 (6.2%)	4 (1.5%)
I take breaks regularly to stand and stretch during long sitting sessions.	244 (93.8%)	12 (4.6%)	4 (1.5%)

I adjust my chair to ensure my hips are slightly above my knees.	238 (91.5%)	14 (5.4%)	8 (3.1%)
I avoid twisting or turning my body awkwardly while seated.	236 (90.8%)	16 (6.2%)	8 (3.1%)
I sit with my elbows close to my body and at a 90-degree angle.	239 (91.9%)	14 (5.4%)	7 (2.7%)
I avoid sitting in the same position for prolonged periods.	237 (91.2%)	15 (5.8%)	8 (3.1%)
I sit with my weight evenly distributed on both hips.	242 (93.1%)	10 (3.8%)	8 (3.1%)
I adjust my seat to provide adequate support for my thighs.	238 (91.5%)	14 (5.4%)	8 (3.1%)
I keep my head aligned with my spine while sitting.	234 (90%)	17 (6.5%)	9 (3.5%)
I use armrests to reduce strain on my shoulders while seated.	238 (91.5%)	16 (6.2%)	6 (2.3%)
I avoid bending forward to reach objects while sitting.	242 (93.1%)	14 (5.4%)	4 (1.5%)