

## Prevalence and Risk Factors of Neck Pain among the Hospital Front and Back Office Workers at the Nairobi Hospital, Kenya

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### ABSTRACT

**Objective:** To identify the prevalence and risk factor of neck pain among the hospital front and back-office workers at The Nairobi Hospital, Kenya.

**Material and methods:** Descriptive cross-sectional studies was carried out among 133 participants on the prevalence and risk factors of neck pain at a specific point of time defined by the population. All variables were collected within a specified duration. An adapted structured close ended questionnaire was used, covering group-made questions for population parameters and variables, for screening neck status for the enrolled participants. In addition to the adapted questionnaire from the Oswestry Neck Disability Index (ONDI) combined with our variables, participants were requested to fill out an adapted combined self-developed questionnaire consisting of demographics characteristics; age, gender, duration of employment, and pain intensity. Collected data was analyzed using statistical package of social sciences-SPSS version 21, and results tabulated in tables, pie charts and graphs.

**Results:** majority of participant ( n=112,84%) were from the age of group between 41-50 years at 42%, followed by 31-40 years at 37%, 21-30 years at 20% and finally 51 years and above at 1%. Females represented by 66% and males at 34% of the participants. Period of employment was between 1-10 years at 60% followed by 11-20 years with 34%, less than 1 year and 21-30 years each represented by 3%. workers currently with neck pain at the Nairobi hospital were (n=38 ,34%). Pain intensity; Majority of those who had neck pain 25% had mild pain, while only 1% had severe pain. Those with risk factors for sitting durations; sitting at 2-4hrs represented by 47.3%, followed by 5-6hrs at 37.5%, less than 2 hours was 8.9%, 7-8hrs was 3.6% and more than 8hrs was 2.7%.

**Conclusion:** study concludes that prevalence of neck pain among front and back-office workers at The Nairobi Hospital currently accounts for 34% with female being the most affected. This is associated with continuous sitting and poor body mechanics in relation to work station and equipment. Age, gender, period of employment, and sitting posture awareness were also found to be important factors influencing the occurrence of neck pain.

**KEY WORDS:** Neck pain, prevalence, risk factors, Front and back-office workers.

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## INTRODUCTION

According to Guzman J et al. [1], neck pain and lower back pain emerged the leading cause of disability globally in 2015. Multiple scientific studies have also shown that there was a substantial increase in prevalence of neck pain between the year 1990 and 2015 following the increase in obesity and ageing population [1,2], acknowledged that neck pain is highly common among women compared to men, and peak on individuals between 40 and 50 years of age. Neck discomfort is linked to a variety of individual and work-related characteristics, according to the findings of this study. An ergonomic and a positive work environment can be encouraged by implementing intervention strategies based on these associated patterns [3].

In terms of treatment expenses and expenditures at regional, national and global level, neck pain has a significant impact on the entire well-being of individuals and their families, communities, health care system, and businesses. Studies have further explained that one third of adults are likely to experience neck pain in the course of one year. This could be attributed to sedentary lifestyles including prolonged sitting in computers, stress work related, poor ergonomics, awkward sitting postures, driving cars for long distances, and physical inactivity. Most epidemiological research shows that about five to ten percent of all adults will experience a severe neck problem [4,5].

The ageing population and increase in general body obesity amongst both genders are among the key factors that have been cited to contribute to neck pain [6,7,8]. Studies from bone and joint decade 2000-2010 on task force of neck pain and its associated disorders suggest that women are twice as likely as males to experience neck pain, with symptoms peaking between 40 and 50 years old [9].

Pain in the upper back, shoulders, and arms that can radiate from the neck have the potential to impair one's capacity to work and have an impact on one's general health and well-being [10]. Patients with cervical radiculopathy and whiplash-related diseases

(WAD) are more likely to have neuropathic pain [11]. Patients who suffer from neuropathy have lower quality of life and worse treatment outcomes than those who don't [12].

Multiple scientific studies have regarded neck pain as a major challenge in the field of public health since it has a severe impact on health and the well-being of individuals and the society. This is because condition has significantly imposed higher direct and indirect medical costs of treatments, and has severe impacts on the medical working conditions and quality of life for different patients, according to [13] many occupational groups such as office workers, particularly the intensive computer users, are at higher risks of rising neck pain. Besides raising the computer dependent activities within the workplaces may significantly result in unhealthy working postures, and together with repetitive movements within the work station, may affect the productivity of the workers.

Neck pain is a critical problem in healthcare among the middle, low income, and developing nations. It is becoming increasingly common throughout the world [2], and is a common musculoskeletal condition that causes morbidity and high level of disability and absenteeism from work amongst cashiers and front care workers at the Nairobi hospital in Kenya. Therefore the main objective of study was to determine the prevalence and risks factors linked to neck pain among the front and back office workers at the Nairobi hospital, Kenya.

Kenya is a developing nation with lower income salaries amongst its employees. Neck pain and related complications are gradually on the rise because of multifactorial components including: long work hours to meet personal needs and family responsibilities, work related stress, lack of access to health care system, low job satisfaction, low income salaries, and inadequate health care personnel. All of these could play significant role in health promotion. The most common cause of neck pain among cashiers, receptionist, call Centre and procurement staff in many organizations include prolonged sitting in a computer for more than 12 hours in a day and lasting

five days per week leading to long working hours that leads to work unproductivity. Many work place facilities have few staff with limited resources [14] poor sitting posture, working in awkward positions on the screen and keyboard [15] work family imbalance and job strain are associated with high occurrence of neck pain [16].

Workplace stress, sadness, and anxiety are all examples of psychosocial issues affecting many office workers in Kenya. The belief of fear avoidance studied by [17] and catastrophizing precipitants [18,19] are among the major risk factors for neck pain chronicity [20]. Incident neck discomfort is strongly influenced by psychological and social factors, as well as by a history of pain [21]. Many of these connections have to do with recurrent neck pain episodes that are not resolved. There is a strong correlation between neck infections and chronic neck discomfort, although this correlation is influenced by cultural and psychosocial factors regardless of the type of the acute disease. Chronic pain has been widely contested as a result of severe injury (especially whiplash).

Neck discomfort affects many people around the world, but little is known about how common it is in Kenya or how much it costs the country. Working diagnosis and patient-centered management are the primary goals of sound evidence-based clinical reasoning.

Neck pain can be treated surgically or by non-surgical methods such as physical therapy (activity modifications, ergonomics, therapeutic exercises, massage, traction, mobilization with movement, manipulation, physical modalities; therapeutic ultrasound, various electrical stimulators, laser therapy) and non-steroid based anti-inflammatory medicines to stimulate activity and return to a regular lifestyle [22]. The goal of this research was to determine prevalence and risk factors associated with neck pain among the cashiers, receptionists, and call center and procurement staff at The Nairobi Hospital (TNH), Kenya.

## MATERIALS AND METHODS

**Study Design, Settings and Duration:** Descriptive cross-sectional study was conducted from

October 2021 to April 2022, the data was collected from the hospital front and back-office workers at The Nairobi Hospital, Kenya.

**Sampling:** A simple random sampling strategy was utilized, enrolled hospital front and back-office workers. Of the 133 participants eligible for our study, both male and female participants were recruited. All participants specified working in a computer, have worked 18 to 60 years, and at least six continuous month at The Nairobi Hospital . All participants voluntary and willingly participated in the study.

Patients with any previous history of neck trauma, serious spinal neck pathology, malignancy, previous history of neck surgical intervention, worked less than six-month employment at the The Nairobi Hospital, not willing to sign inform consent, or not willing to participate were excluded from this study.

**Data collection tool:** An adapted structured close ended Questionnaire was used, covering group-made questions for population parameters and variables – for screening neck status of our participants was used the adapted questionnaire from the Oswestry Neck Disability Index (ONDI) combined with our variables, was used to collect data which include demographics following characteristics; age, gender, duration of employment, pain intensity, duration of working hours in a computer.

**Data collection procedure:** After permission had been sought from The Nairobi Hospital ethical review committee and the front office department, participants were asked to fill the questionnaire, thereafter data was collected with modified questions from Oswestry neck disability index.

**Data analysis procedure:** Descriptive statistics; categorical variables were measured as frequency, percentage, pie chart, range, graph and tables. Data was analyzed by using Statistical Package for Social Sciences (SPSS) version 21.

**Ethical concern:** The approval was taken from the Nairobi Hospital ethical review committee and the front office Department. Informed consent was taken from the study participants

containing that their participation was voluntary, briefly explanatory in details about the purpose and important of the study.

Their information will be kept confidential of all participants in the study was highly protected before, during, after and anytime they leave the study, afterwards the Oswestry neck disability index was filled for data collection.

## RESULTS

**Demographic characteristics:** Response Rate (n=112) Out of Total population of 200 a sample size of 133 workers were issued with questionnaires out of which 112 (83%) completely filled questionnaires as seen in figure 1.

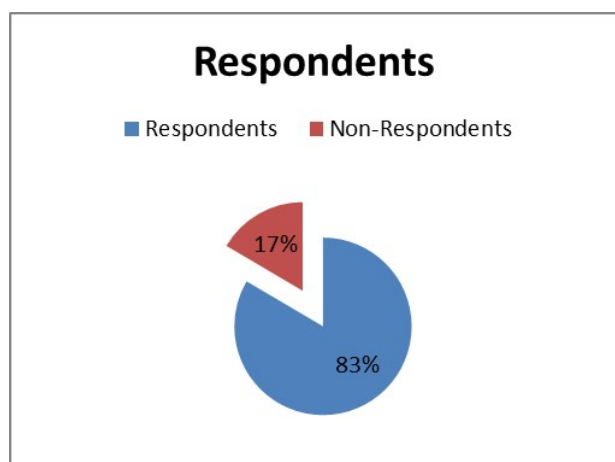


Fig. 1: Response rate.

**Age Group Distribution:** Figure 2 indicates the Age Group Distribution of the respondents, results indicate that majority of the participants were aged between 41-50 years represented by 42%, followed by 31-40 years at 37%, 21-30 years at 20% and finally 51 years and above at 1%

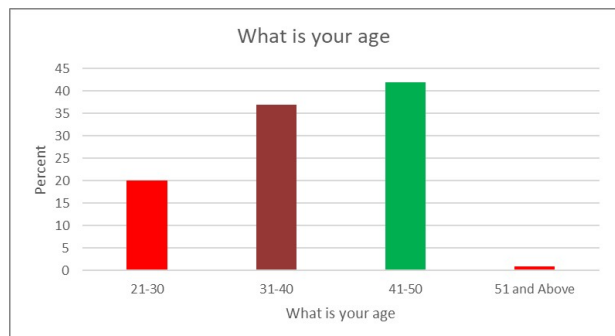


Fig. 2: Age Group Distribution

**Gender distribution:** Regarding gender Fig 3. shows majority were females represented by 66% and males at 34%

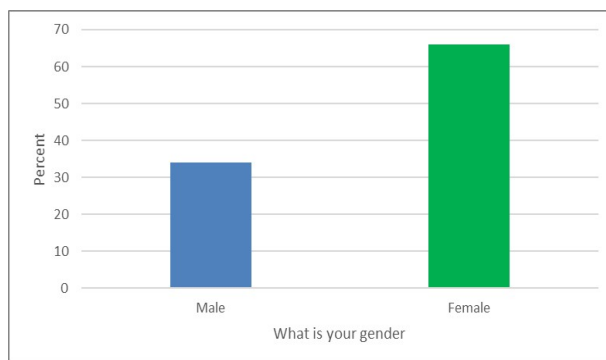


Fig. 3: Gender distribution.

**Period of employment at The Nairobi Hospital:** The study established that the highest period of employment was between 1-10 years representing 60% followed by 11-20 years with 34%, less than 1 year and 21-30 years each represented by 3% as seen in figure 4.

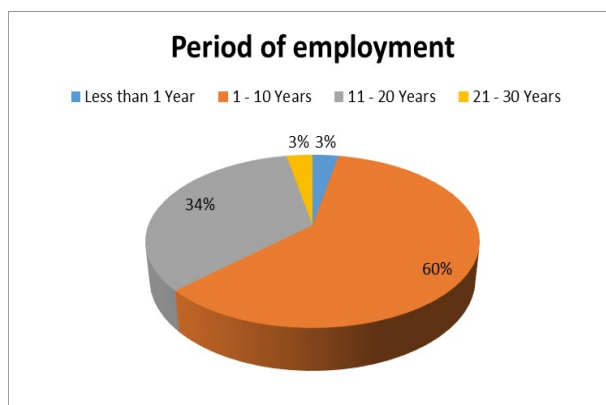


Fig. 4: Period of Employment.

**Prevalence:** Figure 5. shows the workers currently with pain at the Nairobi hospital were 38 representing 34%.

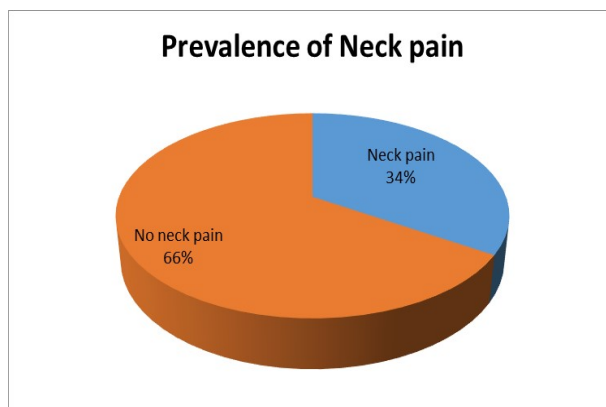


Fig. 5: Prevalence of Neck Pain distribution.

**Pain intensity:** The study presents the pain intensity of those participants who had neck pain, had no history of trauma and had worked in Nairobi hospital for six months and above. in table1, Majority of those who had neck pain 25% had mild pain while only 1% had severe pain.

**Table 1:** Pain characteristics (n=100).

Pain Intensity	Frequency	Percent
I have no pain at the moment	65	65
My pain is very mild at the moment	25	25
My pain is moderate at the moment	8	8
My pain is fairly severe at the moment	1	1
My pain is very severe at the moment	1	1

**Table 2:** Knowledge of Good Sitting Posture/postural awareness, sitting duration (n=112).

Are you aware of good sitting posture			
	Frequency	Percent	Cumulative Percent
Maybe	2	1.8	1.8
Somehow	37	33	34.8
Yes	71	63.4	98.2
No	2	1.8	100
At work how long do you sit continuously without taking a break			
Less than 2 hours	10	8.9	8.9
2 to 4 hours	53	47.3	56.3
5 to 6 hours	42	37.5	93.8
7 to 8 hours	4	3.6	97.3
More than 8 hours	3	2.7	100

**Table 3:** Ergonomic Seat, Work Station Level (n=112).

Is your work chair able to adjust up and down				
	Frequency	Percent	Valid Percent	Cumulative Percent
Yes	98	87.5	87.5	87.5
No	14	12.5	12.5	100
Is your work chair able to turn to either side				
Yes	95	84.8	84.8	84.8
No	17	15.2	15.2	100
Is your work chair able to adjust to comfortably support you				
Yes	62	55.4	55.4	55.4
No	50	44.6	44.6	100
Is your work chair able to recline forwards and backwards				
Yes	35	31.3	31.3	31.3
No	77	68.8	68.8	100
Is your work chair not adjustable				
Yes	11	9.8	9.8	9.8
No	101	90.2	90.2	100
When you sit at work station what is your computer level				
Slightly high than work level	9	8	8	8
Same level as you	93	83	83	91.1
Very low than your work level	4	3.6	3.6	94.6
Slightly low than your work level	6	5.4	5.4	100

**Table 4:** Environmental & Physical Factors – Workloads (n=112).

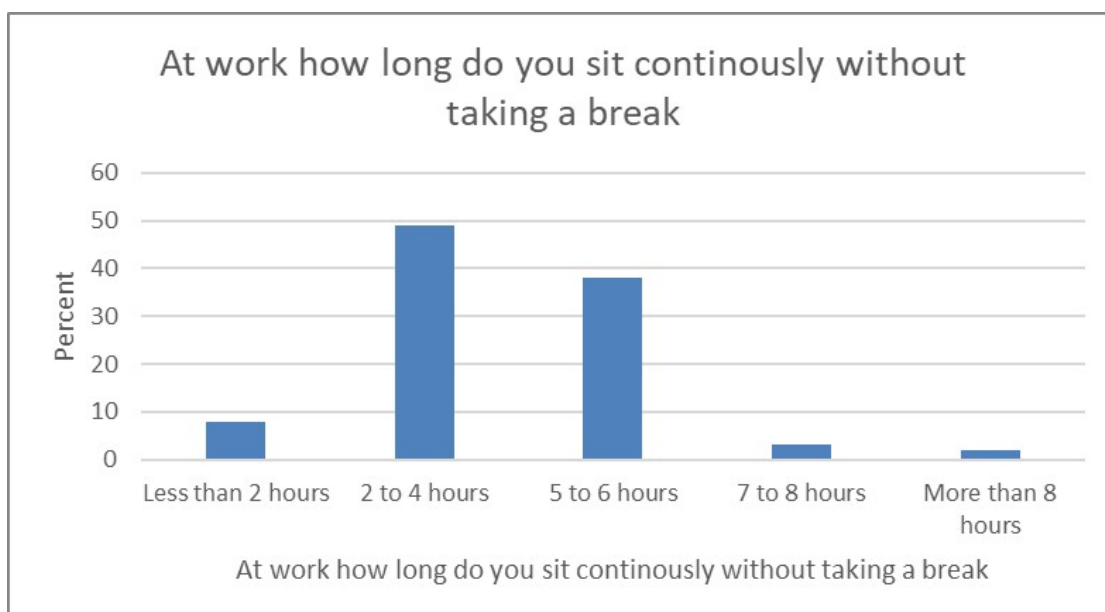
Working	Frequency	Percent	Cumulative Percent
I can do as much work as I want to	76	67.9	67.9
I can only do my usual work, but no more	25	22.3	90.2
I can do most of my usual work, but no more.	9	8	98.2
I cannot do my usual work	1	0.9	99.1
I cannot do any work at all.	1	0.9	100

**Table 5:** Pain and work station level (n=112).

Pain Intensity * When you sit at work station what is your computer level Cross tabulation		When you sit at work station what is your computer level				Total	Pearson Asymptotic Significance (2-sided)
		Slightly high than work level	Same level as you	Very low than your work level	Slightly low than your work level		
Pain Intensity	I have no pain at the moment	3	67	1	3	74	0,001
	My pain is very mild at the moment	2	20	1	3	26	
	My pain is moderate at the moment	3	4	1	0	8	
	My pain is fairly severe at the moment	0	1	1	0	2	
	My pain is very severe at the moment	1	1	0	0	2	
	<b>Total</b>	9	93	4	6	112	

**Table 6:** Pain and continuous sitting duration (n=112).

Pain Intensity * At work how long do you sit continuously without taking a break Cross tabulation		At work how long do you sit continuously without taking a break					Total	Pearson Asymptotic Significance (2-sided)
		Less than 2 hours	2 to 4 hours	5 to 6 hours	7 to 8 hours	More than 8 hours		
Pain Intensity	I have no pain at the moment	9	26	35	3	1	74	0
	My pain is very mild at the moment	0	22	4	0	0	26	
	My pain is moderate at the moment	1	4	2	0	1	8	
	My pain is fairly severe at the moment	0	1	0	1	0	2	
	My pain is very severe at the moment	0	0	1	0	1	2	
	<b>Total</b>	10	53	42	4	3	112	



**Fig. 6:** Sitting Duration.

**Risk factor:** The study sought to establish the ergonomic risk factors associated with neck pain at the Nairobi Hospital by determining their knowledge regarding sitting duration, posture working positions, and design of work stations.

Duration of sitting posture, where majority almost a half of the sample population were sitting at 2-4hrs, represented by 47.3% followed by 5-6hrs at 37.5%, less than 2 hours was 8.9%, 7-8hrs was 3.6% and more than 8hrs was 2.7% represented by table 2.

**Sitting Duration:** Figure 6. further illustrates continuous sitting at work with 2-4 hours leading majority with 48% followed by 5-6 hours at 37%.

Table 3. presents ergonomic seat features and working station level where 87.5% of the seats are able to adjust up and down, 84.8% are able to turn to either side, 55.4% are able to comfortably support the worker, 31.3% are able to recline forwards and backwards, 9.8% are not adjustable, in terms of work level 83% are at same level with the worker, 8% are slightly high than the work level, 5.4% are slightly low and 3.6% are very low compared to the work station.

Table 4. represents Environmental and physical factors - In relation to working 67.9% can do as much work as they want to, 22.3% can only do their usual work but no more, % can do most of their usual work but no more, 0.9% reported being not able to do most of their usual work and remaining 0.9% reported not being able to do any work at all.

### **Association between variables**

**Association between work station level and pain:** Regarding the association between work station level and pain intensity, the majority respondents were at same level work station with 67 (72%) reporting pain from mild, moderate to severe and with 26 (28%) reporting no pain. Same level work station representation formed the majority at 93 of the 112 respondents representing 83%, the respondents with no pain in the same level work station representation were also majority at 61.4 (66%) with 31.6 (34%) having pain, with

significant association between work station level and pain intensity ( $p=0.001$ ) as demonstrated in table 5.

**Association between continuous sitting and pain:** The results further revealed that regarding continuous sitting and pain, the respondents who we're sitting for 2-4 hours had almost a half with pain when respondents with mild, moderate and severe pain were combined to 26 (49%) and 27 (51%) reported no pain, this was followed by 5-6 hours group with 7 (17%) having pain and majority at 35 (83%) having no pain, regarding total representation of 2-4 hours continuous sitting group was 53 out of 112 respondents, representing 47% of the total group, with significant association between the duration of continuous sitting and pain ( $p=0$ ) as shown in table 6.

### **DISCUSSION**

**Prevalence:** The study presents a high prevalence of neck pain accounts for 33% and is more common in female than males. There are also associations with individuals who worked in a computer for long working hours, perform occupational activities while sitting and leaning, and worked in awkward positions and poor ergonomics.

This study sought to describe the risk associated with neck pain among hospital front and back-office workers at TNH. This was through establishing their demographic data and self-reported survey of knowledge regarding sitting duration, posture working positions and redesign of work stations. Knowledge of these risk factors will help to manage and reduce future treatment cost and disability related to neck pain.

**Age:** The study demonstrated that the most affected age group was 41-50 years represented by 20(47%), while the 41-50 age group respondents were 43 out of 112 which 38% was. However, there was no association between age and pain intensity ( $p=0.212$ ). The results were synonymous with a study by (23) who revealed that the risk of neck pain increased until the age of 50 and decreased slightly thereafter. This is in line with earlier studies also (24) concluded that female gender and

older age were predictors of neck disorders.

**Gender:** The results showed that female respondents reported a higher percentage of being affected with neck pain 27(37%) than males 11(28%). There was no significant statistical association with pain intensity ( $p=0.152$ ). This reflected a contrast as documented by a study that was done in Iran by Bhutto (2019) which showed that males suffered more neck pains than females, concluding that males are at a greater risk compared to females. The findings of the current study were in consistent with those of Leclerc A, et al. [24] and Labbafinejad Y et al. [25] who concluded that female gender and older age were predictors of neck disorders.

**Period of Employment:** Concerning period of employment, the most affected respondents were grouped in the period between 1-10 years where 45 (68%) of the respondents had various forms of pain intensity from mild, moderate to severe, followed by period between 11-20 years where 21 (60%) reported pain. There was no association between the period of employment and pain ( $p=0.854$ ). This may be due to changes that occur during repetitive long duration same positions, the results were inconsistency with a study done in Iran by Ehsani F et al. [26] that found high prevalence of neck pain among office employees. Office work is a high-risk occupation for neck pain. Age, gender, length of employment, healthy status, and job satisfaction were known as risk factors for developing neck pain.

**Work Station Computer Level:** Regarding association between work station level and pain intensity, the majority respondents were at same level work station with 67 (72%) reporting pain from mild, moderate to severe, Same level work station representation formed the majority at 93 of the 112 respondents representing 83%, The respondents with no pain in the same level work station representation were also majority at 61.4 (66%) with 31.6 (34%) having pain. However, there was significant association between work station level and pain intensity ( $p=0.001$ ), this may be associated with comfortable prolonged duration, it may also be due to seat and desk design, similar results were reported in a study

done in Iran, Yasser [25] that also mentioned risk factors for neck pain include prolonged desk work, prolonged standing, prolonged sitting, and working at a computer workstation.

**Good Sitting Posture Awareness:** In regards to sitting posture, the results also revealed that between good posture awareness and pain covered with yes to those who are aware and of those not aware having somehow, maybe and absolute no, the highest representation was by yes by 71 (37%) respondents of the 112. While the others combined were at 63%, but there was no significant association between good posture awareness and pain ( $p=0.77$ ) This is consistent with study by Ali Bhutto M, et al. [27] that reported that Poor posture and ergonomics are risk factors but the incidence of pain in more in latter, the results revealed that amongst the symptomatic-population, 69% didn't follow and/ or were unaware about ergonomics and 62% adopted poor postures. These results were consistent also with the study by Cagnie B, et al. [23] that showed holding the neck in a forward bent posture for a prolonged time, sitting for a prolonged time, and making the same movements per minute are risk factors for neck pain. Similar results in a study in Nigeria on complaints of neck pain among frequent computer users by Tella B, et al. [28] found risk factors of body posture, job demand, and work environment are associated with the prevalence of neck pain among employees Continuous Sitting.

The study sought to determine the relation of continuous sitting duration and pain. The results revealed that in TNH related to continuous sitting and pain, the respondents who were sitting for 2-4 hours had almost a half with pain when respondents with mild, moderate and severe pain were combined to 26 (49%), This was followed by 5-6 hours group with 7 (17%) having pain and majority at 35 (83%) having no pain, Regarding total representation of 2-4 hours, the continuous sitting group was 53 out of 112 respondents, representing 47% of the total group. There was an association between the number of continuous sitting and pain ( $p=0$ ). This explains the reason towards evidence of increased cases of neck pains in front and back-office workers



in the study population. Total sitting time is associated with higher risk of musculoskeletal conditions, more so the neck and low back due to continuous pressure on the supportive soft tissue and supportive tissues, the results were consistent with a study done in Sweden by Kallings L v., et al. [29] which found out that both sitting almost all the time at work and not taking breaks in workplace sitting are associated with an increased risk of self-reported poor general health and back/neck pain also synonymous with repeating the above results by Cagnie B et al. [23] that showed often sitting for a prolonged time is a risk factors for neck pain.

## CONCLUSION

The results from our study present that the prevalence of neck pain among front and back-office workers at TNH currently accounts for 34%, with female being the most affected. This is associated with continuous sitting and body mechanics in relation to work station and equipment. Age, gender, period of employment and sitting posture awareness were also found to be important factors influencing the occurrence of neck pain.

**Recommendations:** The study was conducted among the front and back-office workers at The Nairobi Hospital. In future the studies should be conducted in other departments, hospital management through physiotherapy department should provide periodical postural awareness and educational trainings which will help empower the workers to help reduce incidents and analyze factors and predictors of neck pain at The Nairobi Hospital should provide periodical postural awareness and educational trainings which will help empower the workers to help reduce incidents of neck pain.

**Limitations:** The study was conducted among the front and back-office workers at The Nairobi Hospital. In future the study should be conducted in other departments as well. In this study few demographics like, smoking, height, weight, ratio of spinal canal diameter to vertebral body ratio, which are highly contributing are highly contributing factors in neck pain were not asked, the next studies they

should be included.

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