PREVALENCE OF CERVICOGENIC HEADACHE IN PHYSIOTHERAPY STUDENTS AND ITS ASSOCIATION WITH SMART PHONE USAGE

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Abstract-
Background: The main symptoms of cervicogenic headaches include pain originating in the neck that can travel to the head or face, headaches that get worse with neck movement, and limited ability to move the neck. Due to extreme usage of smart devices there is persistent stress on the cervical spine because of repeated flexed position of head and neck and this position can cause musculoskeletal stress.
Objective: The objective of the research was to identify the amount of Cervicogenic headache present in Physiotherapy students by performing the assessment for cervicogenic headache and to evaluate the assessment of Cervicogenic headache in Physiotherapy student by using cervical flexion rotation test.
Methods: A study was conducted to determine Prevalence of Cervicogenic Headache in Physiotherapy Students and its association with Smart phone Usage of Dr. A.P.J. Abdul Kalam College of Physiotherapy, Loni, Maharashtra, for the age group 18-30 years with a sample size of 165 Physiotherapy students. Students with cervicogenic headache more than 5days/month were included. Cervicogenic Headache were diagnosed with Cervical Flexion Rotation Test (CFRT).
Result: Among 165 participants 134 participants were female i.e. 80.7% and 32 participants were male i.e. 19.3%. Cervical flexion rotation test reported that, 51.8% individuals are positive and 48.2% individuals are negative.
Conclusion: The result of the study concluded that the Prevalence of cervicogenic headache for CFRT (cervical flexion rotation test) is 85 were positive and 80 were negative among 165 Physiotherapy students. So, the prevalence of cervicogenic headache was 51.8% among Physiotherapy students. Long hours in front of a smartphone could expose Physiotherapy students to Headache, Neck and Wrist Pain. There is a considerable prevalence of cervicogenic headache among Physiotherapy students.

Keywords: **Cervicogenic Headache, Cervical Flexion Rotation Test (CFRT), Physiotherapy Student, Smart phone addiction, Depression.**

INTRODUCTION

Smart phone use has enhanced productivity, but excessive use can also cause headaches, visual impairment, musculoskeletal pain, and other symptoms [(2)]. Due to more use of smart devices, there is persistent stress on cervical spine due to prolong flexed position of head & neck causes musculoskeletal imbalances such as decreased head & neck range of motion, lack of sleep and lethargy [(7)].

Headaches have been posed to be a common occurring complaint being as frequent as 66% in the general population. [(1)] The International Headache Society (IHS) has classified headaches into two main categories: primary and secondary [(1)]. Cervicogenic headache (CGH) is one of the latter types of headaches wherein the symptoms occur in a relation to another disorder [(1)]. About 47 percent of the global population suffers from some type of headache and 15 to 20% have 1 cervicogenic type of headache [(3)]. About 2 to 3 percent of the total world population suffers from 2 cervicogenic headache [(3)]. It is 4 times more common in females [(3)].

Cervicogenic headache is pain that is originated from upper cervical vertebra due to compression of sensory nerve that supply of scalp [(3)]. Cervicogenic headache is not a primary headache and, in this headache, pain is originated from the posterior part of neck and radiate towards the front of head and ipsilateral eye which can last from a few hours to days [(5)]. Cervicogenic headache may become debilitating if not properly address and may need frequent visits to monitor as the prognosis may be depending upon the age, intensity of headache on movements [(7)]. A cervicogenic Headache (CGH) presents with a cardinal feature as follows – one sided chronic recurrent & long lasting, severe, pain starting from the neck Pain is precepted by neck movements [(7)]. Pain is usually accompanied by reduced range of motion (ROM) [(7)]. This pain is caused by changes in cervical spine (mainly the upper three segments) and its constituent bony, disc or soft tissue

structures [1]. CGH is a syndrome described as pain felt on one side of the head, relating same side neck, shoulder and arm pain and it aggravated by neck movements, sustained head posture and limited range of movement [1]. Cervicogenic headache is basically a referred pain originated by irritation cervical structure which are innervated by C1, C2, C3 nerve roots. Structure innervated from C1 – C3 are the structures for cervicogenic headache [7]. C2 dermatome is 6-8 cm wide from occiput to vertex & C3 dermatome covers ear, pinna, lateral check, angle of jaw [7]. Aseptic inflammation and neurotransmission within the C-fibers that is caused by cervical disc pathology is thought to produce and worsen the pain in a cervicogenic headache [7]. Trigeminocervical nucleus receives signals from the trigeminal nerve and C1, C2, C3 spinal nerves. Chronic spasm of - shoulder, neck, scalp, muscle strain, habituated improper posture, whiplash, Neck trauma, patients low pain threshold contributing to more severe pain [7].

Now a day's smart phone has become more like personal computer [5]. The smart phone release harmful rays of electromagnetic field and unfortunately due to excessive usage of smartphones, human health is getting affected by this ray [5]. Uncontrolled usage of mobile phone causes many health-related issues like tiredness, poor vision, lack of concentration, headache, sleep deprivation and prolonged forward head posture causes upper back muscles to become deformed with the passage of time due to sustained poor posture [5]. Due to constant incorrect posture adapted while using smart phone leads to bad posture [5]. Early diagnosis and treatment will be proved helpful [7]. A frequency and duration of physiotherapy sensation depends upon the severity, 30 minutes to 1hr of physiotherapy sensations with patient's education, lifestyle modification, proper home exercise program by videos, handouts, online resources will help the patients [3]. People with cervicogenic headache are treated with spinal manipulative therapy including both mobilization and manipulation [5]. Physical therapy is considered the first line of treatment. Manipulative therapy and therapeutic exercise regimen are effective in treating a cervicogenic headache. According to a study by Jull and Richardson, 72% of patients had achieved a reduction of 50% or more in headache frequency at the 12-month follow-up, and 42% of patients reported 80% or higher relief of some sort [7]. The cervical flexion rotation test (CFRT) exhibits the strongest diagnostic accuracy and high reliability for the diagnosis of cervicogenic headache [5]. To determines the frequency of cervicogenic headache in Physiotherapy students due to usage of smart phone devices [5].

NEED FOR STUDY

The number of hours spent on the phone is increasing exponentially. Excessive use can also cause headaches, visual impairment, musculoskeletal pain, and other symptoms. Patients with Cervicogenic Headache had a high prevalence of Depression as reported by the PHQ-9 when compared to their counterparts who suffered from disorders other than headache. Early diagnosis and treatment will be proved helpful. Therefore, it is important to know how many of Physiotherapy Students actually experiencing Cervicogenic Headache. This will help in early acknowledgement and will provide numerical data that will in turn help physiotherapist interfere early and reverse the condition before extreme harm is done.

RESEARCH QUESTION

What is the Prevalence of Cervicogenic Headache in Physiotherapy Students and its association with Smart phone Use?

AIMS AND OBJECTIVES OF THE STUDY

AIM:

The aim of the study is to evaluate the Prevalence of Cervicogenic Headache in Physiotherapy Students and its association with Smart phone Usage.

OBJECTIVES FOR THE STUDY:

1. To identify the amount of Cervicogenic headache present in Physiotherapy students by performing the assessment for cervicogenic headache.
2. To evaluate the assessment of Cervicogenic headache in Physiotherapy student by using cervical flexion test.

REVIEW OF LITERATURE:

1. **Mahin Khilji, et. al.** - Conducted study on Frequency of cervicogenic headache among students of Rehman Medical Institute Peshawar Khyber Pakhtunkhwa January 2019. This study concluded that students in medical institutes are prone to developing cervicogenic headache which might be due to wrong posture during their studies.
2. **MUHAMMAD TALHA HASSAN JAVED, et. al.** – Conducted study on Cervicogenic Headache among Young Adults Using Computers with more than 3 Hours of Screen Time December 2021. This study concluded that long working hours in front of a screen could expose freelancers and entrepreneurs to headache and neck pain. There is a considerable prevalence of cervicogenic headache among digital freelancers and entrepreneurs. The greatest cause of cervicogenic headache is a bad posture.

3. **Farjad Afzal, et.al.** – Conducted study on cervicogenic headache and neck pain among computer users June 2020. This Study Concluded that prevalence of head and neck pain is increasing among computer users. The most common cause may be prolonged use of laptop and computer in wrong posture.
4. **Keerthi Rao, et. al.** – Conducted study on cervicogenic Headache and Depression: A Questionnaire Based Survey January 2013. This Study Concluded that patients with Cervicogenic Headache had a high prevalence of Depression as reported by the PHQ-9 when compared to their counterparts who suffered from disorders other than headache.
5. **Sara Aabroo, et. al.** – Conducted study on FREQUENCY OF CERVICOGENIC HEADACHE IN STUDENTS DUE TO USAGE OF SMART DEVICES - CROSS SECTIONAL SURVEY July 2022. This study concluded that cervicogenic headache is more common in female university students as compared to male and it is due to the poor posture adopted and excessive use of smart devices.
6. **Shah Fahad Ali, et. al.** – Conducted study on Prevalence of Neck Pain and Its Association with Computer Usage in University Academic Staff in Peshawar January 2022. This study concluded that neck pain and computer usage among academic staff of private universities in Peshawar, Pakistan, are associated.
7. **Dr. Gaurai M Gharote, et. al.** – Conducted study on Prevalence of Cervicogenic Headache in Computer Users in New Normal February 2023. This Study Concluded that there is prevalence of cervicogenic headache among IT professionals. The greatest cause of cervicogenic headache is a bad posture and long hours of sitting that exerts pressure on the upper cervical spine indirectly leading to headaches.
8. **Malavde Rutuja, et. al.** – Conducted study on prevalence of cervicogenic headache in dentists in Indian journal of public health and research and development, 2020. This study concluded that 26.73% of dentists have cervicogenic headache.
9. **Necdet Karlı, MD, et, al**. – Conducted study on Headache Prevalence in Adolescents Aged 12 to 17: A Student-Based Epidemiological Study in Bursa November 16, 2005. The objective of this study was to investigate the prevalence and sociodemographic characteristics of headaches among Turkish adolescents aged 12 to 17 years old in Bursa province of Turkey. This study concluded that age and gender appeared to be demographic factors increasing adolescent headache prevalence. Frequent episodic-tension type headache was the most common headache followed by migraine.
10. **Toshitaka Hamamura et, al** – Conducted study on Validity, reliability, and correlates of the Smartphone Addiction Scale–Short Version among Japanese adults 2023. The short version of the smartphone addiction scale (SAS-SV) is widely used to measure problematic smartphone use (PSU). This study examined the validity and reliability of the SAS-SV among Japanese adults, as well as cross-sectional and longitudinal associations with relevant mental health traits and problems. This study concluded that the cross-sectional and longitudinal associations of the SAS-SV provided further evidence regarding PSU characteristics.
11. **WILLIAM W. K. ZUNG** – Conducted study on a self-rating depression scale. The fact that there is a need for assessing depression, whether as an affect, a symptom, or a disorder is obvious by the numerous scales and inventories available and in use today.

METHODOLOGY:

- **STUDY SETTING:** Dr. A.P.J. Abdul Kalam College of Physiotherapy.
- **DURATION OF STUDY:** 6 Months
- **METHOD OF COLLECTION OF DATA:** Data will be primary collected by principal investigator.
- **TYPE OF DATA:** Quantitative.
- **STUDY DESIGN:** Survey
- **STUDY TYPE:** Cross-sectional observational study.
- **SAMPLING METHOD:** Simple Random Sampling.
- **SAMPLE SIZE:** 165.
- **STUDY POPULATION:** Physiotherapy Students.
- **TOOLS:** Data collection sheet.
- **MATERIALS:** Informed consent.

SELECTION CRITERIA:

Inclusion criteria:

Participants included will be:

- Students with cervicogenic headache more than 5days/month.
- Students with positive cervical flexion rotation test.
- Students who are 18-30 years old.

Exclusion criteria:
Participants excluded will be:
- Students who are diagnosed with migraine.
- Individuals who are not ready to provide informed consent.

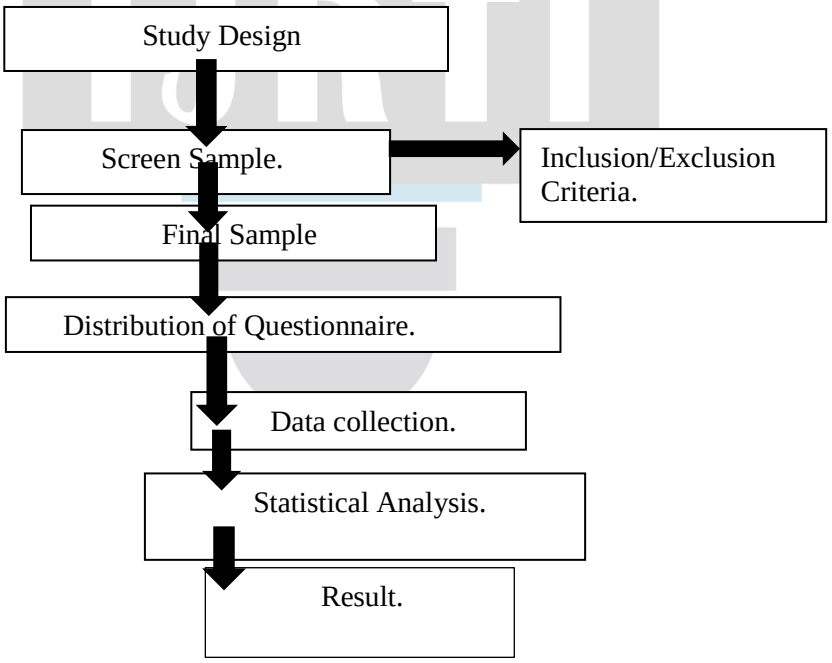
OUTCOME MEASURE:
- Patient rated Cervical flexion rotation test evaluation.
- Numeric Pain Rating Scale (NPRS)
- Zung Self-Rating Depression Scale.
- Smartphone addiction scale (SAS)

VARIABLES:
Dependent variables: -
- Cervical Flexion Rotation Test (CFRT)
- Numeric Pain Rating Scale (NPRS)
- Zung Self-Rating Depression Scale.
- Smartphone addiction scale (SAS)

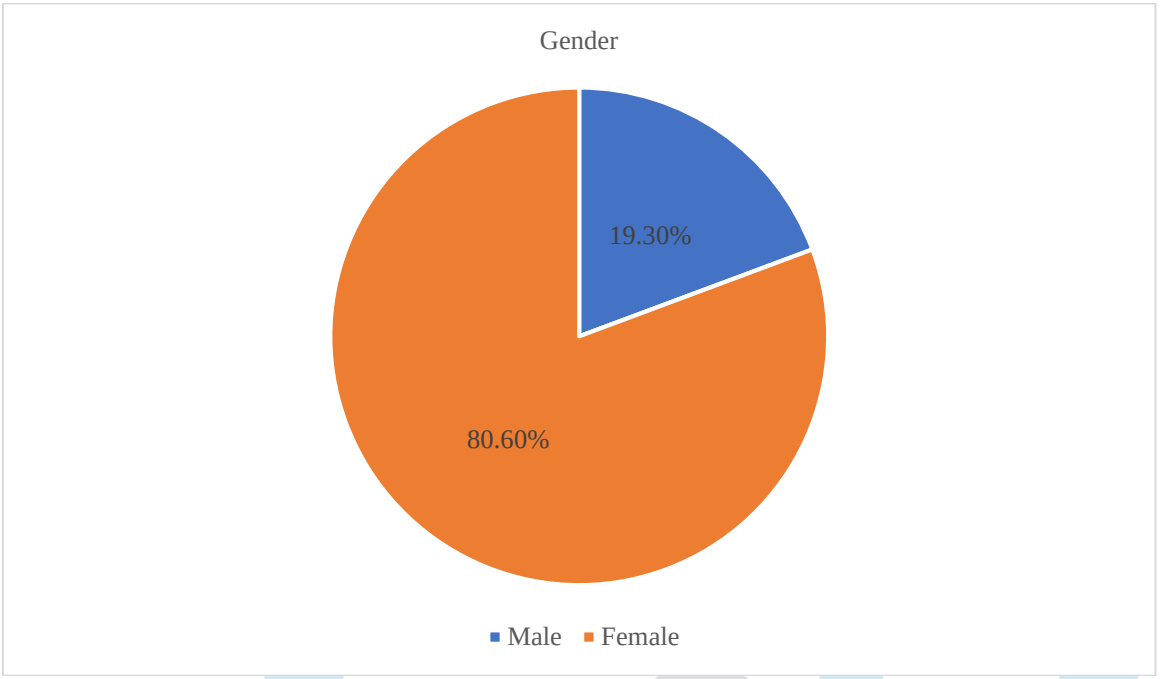
Independent variables: -
- Sociodemographic data such as age, gender and level of education were collected.

PROCEDURE:
- The procedure of data collection involves the several steps, firstly the study design is decided, the sample is drawn, where the inclusion and exclusion criteria are applied from which the subjects are derived.
- An informed Consent is taken from every subject before participation in the complete study.
- The data analysis includes the application of Questionnaire which will have 31questions to all the subjects.
- The questionnaire will be given to all the subjects.
- The data analysis summaries the collected data, analytical and logical reasoning determine the patterns and inter-relationships between the subjects, promoting the deviation of conclusion.
- In order to develop conclusion, the outcome measures will be determined by deriving the score from the questionnaire.

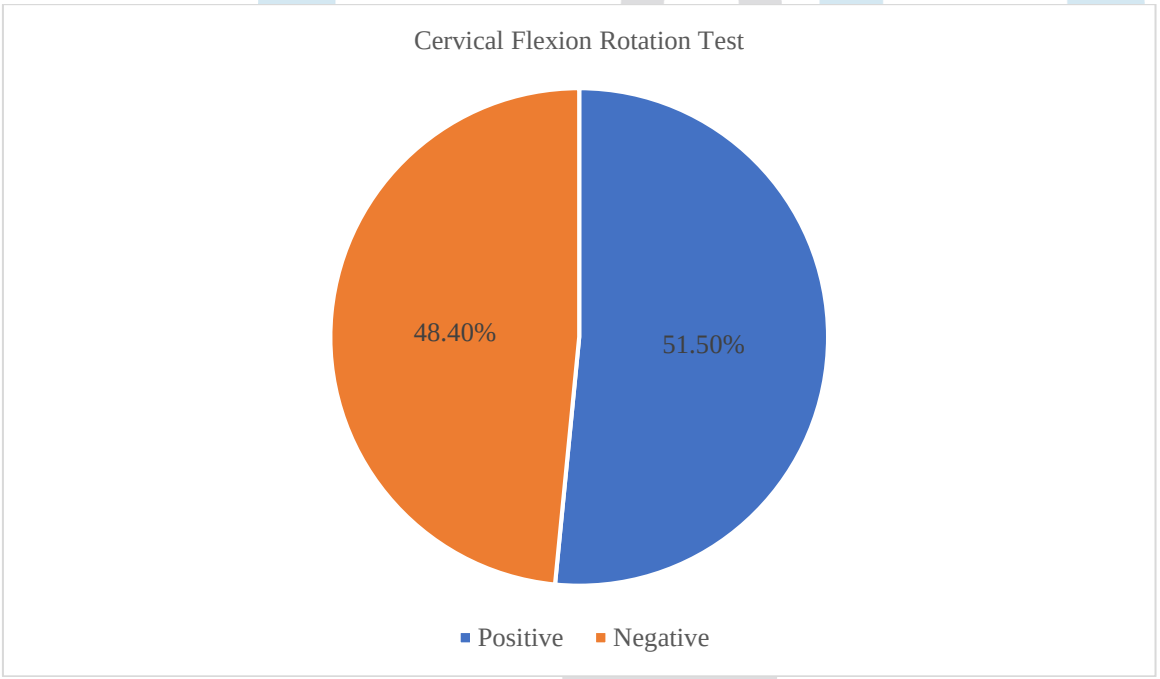
FLOW DIAGRAM:



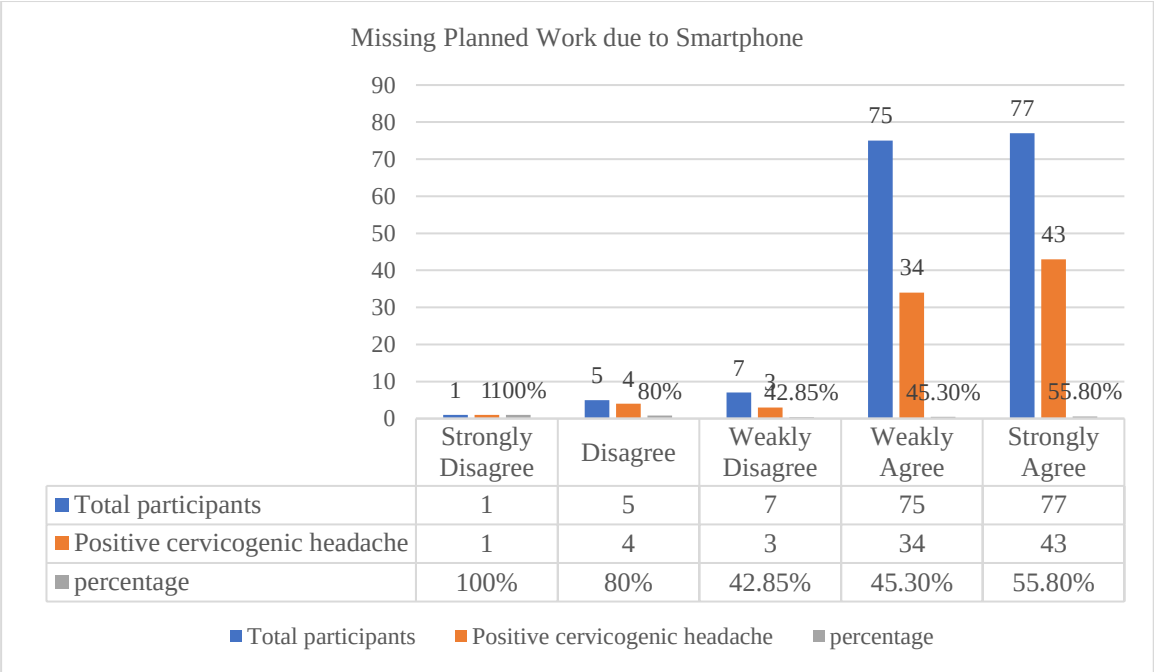
DATA ANALYSIS AND RESULTS: -



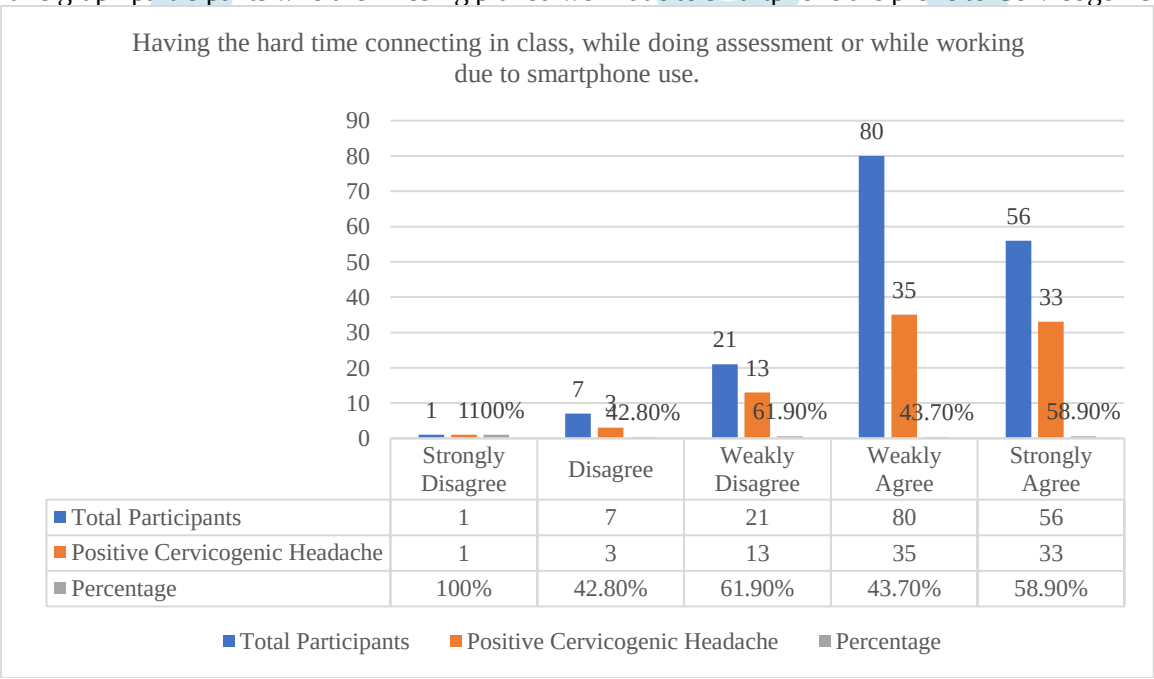
This represents from 165 participants 133 participants were female i.e. 80.6% and 32 participants were male i.e. 19.3%.



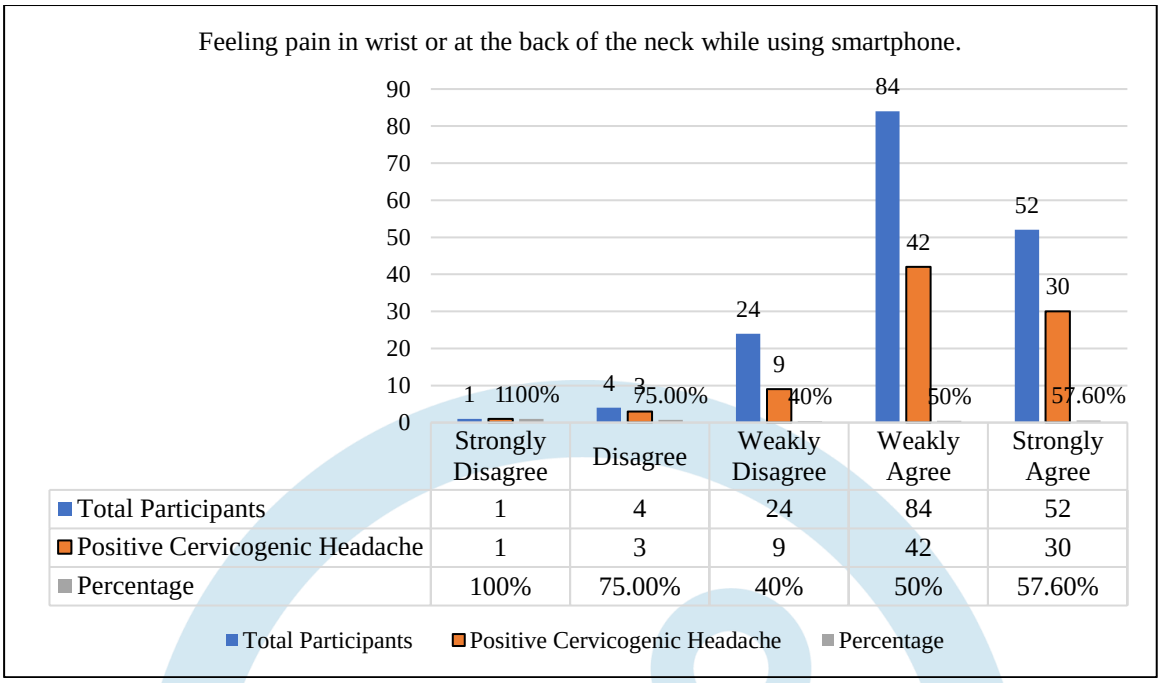
This represents 51.5% individuals are positive for Cervical flexion rotation test and 48.4% individuals are negative for cervical flexion rotation test.



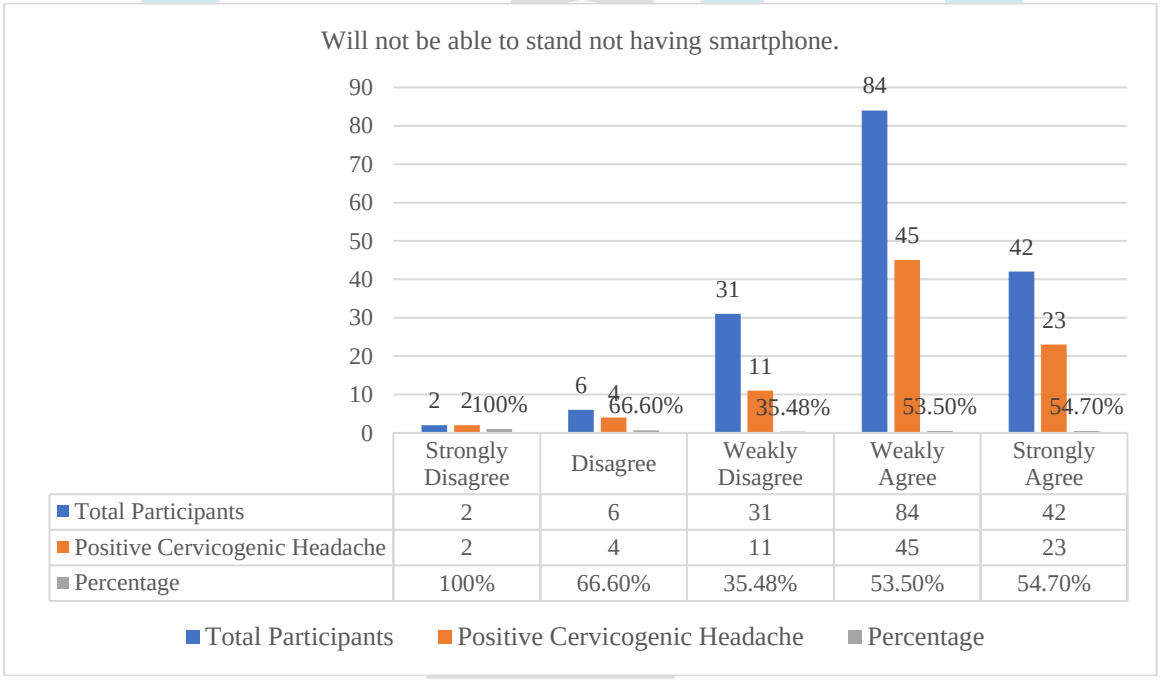
As seen in this graph participants who are Missing planed work due to smartphone are prone to Cervicogenic headache.



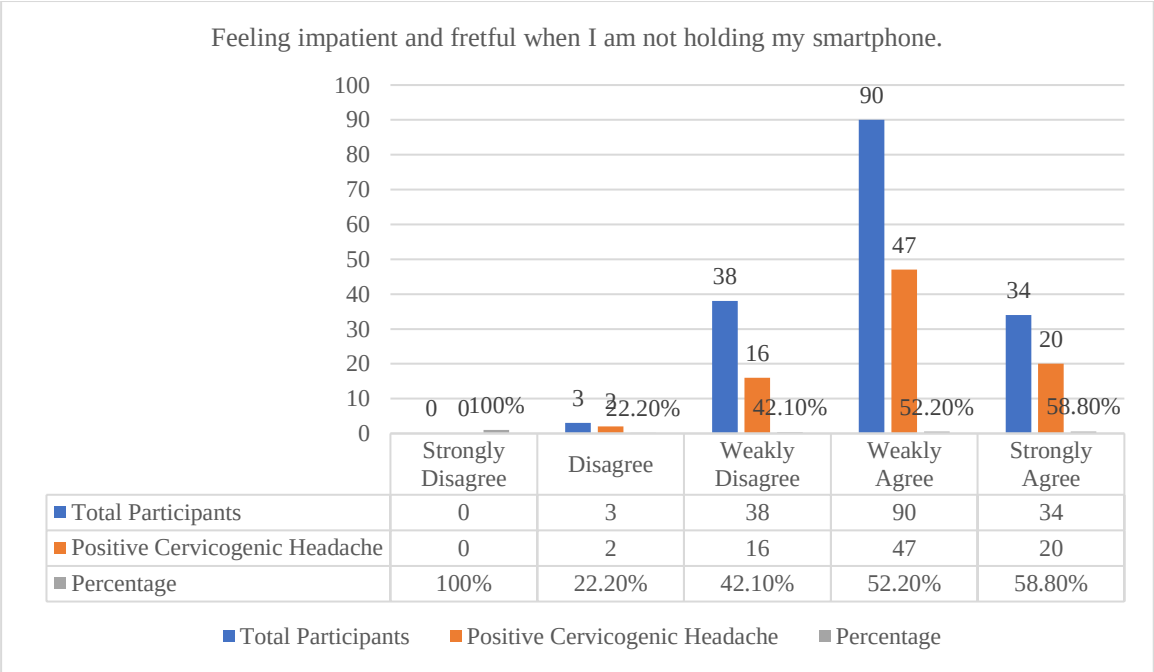
As seen in this graph participants who are having the hard time connecting in class, while doing assessment or while working due to smartphone use are prone to Cervicogenic headache.



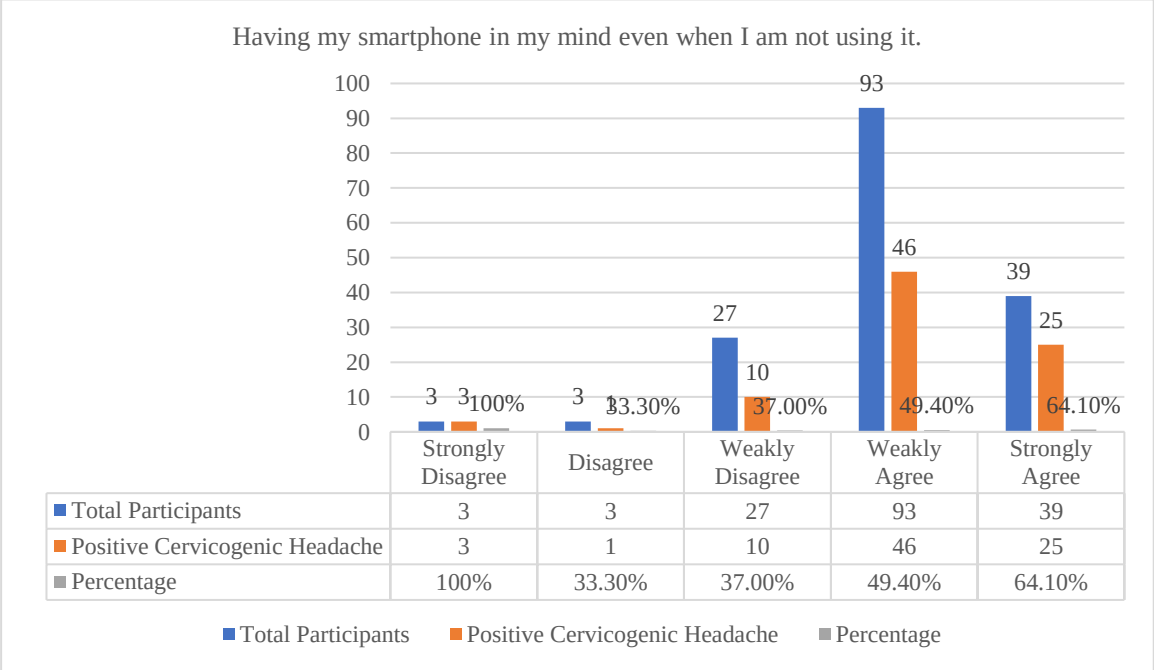
As seen in this graph participants who are feeling pain in wrist or at the back of the neck while using smartphone are prone to Cervicogenic headache.



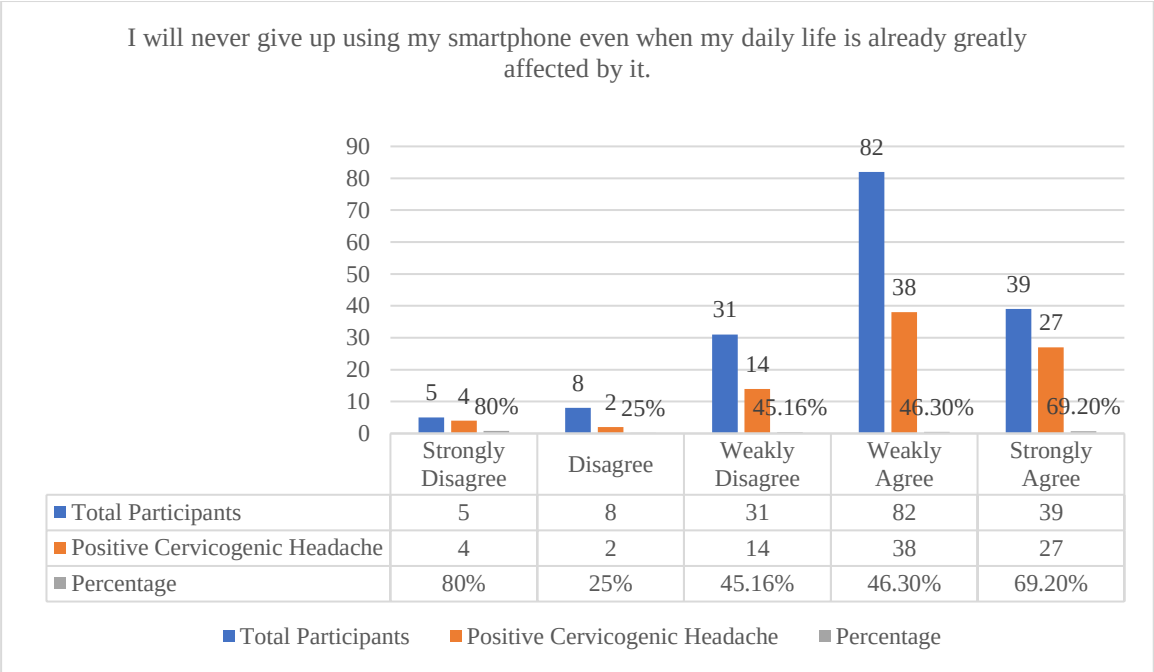
As seen in this graph participants who are not be able to stand not having smartphone are prone to Cervicogenic headache.



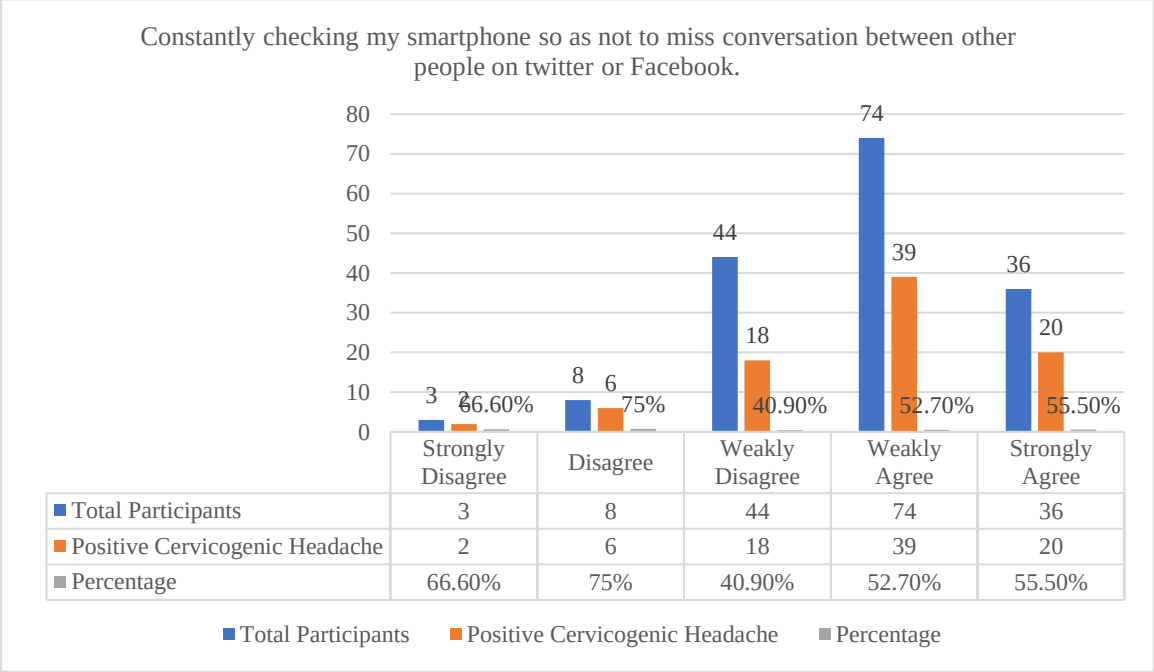
As seen in this graph participants who are feeling impatient and fretful when I am not holding my smartphone are more prone to Cervicogenic headache.



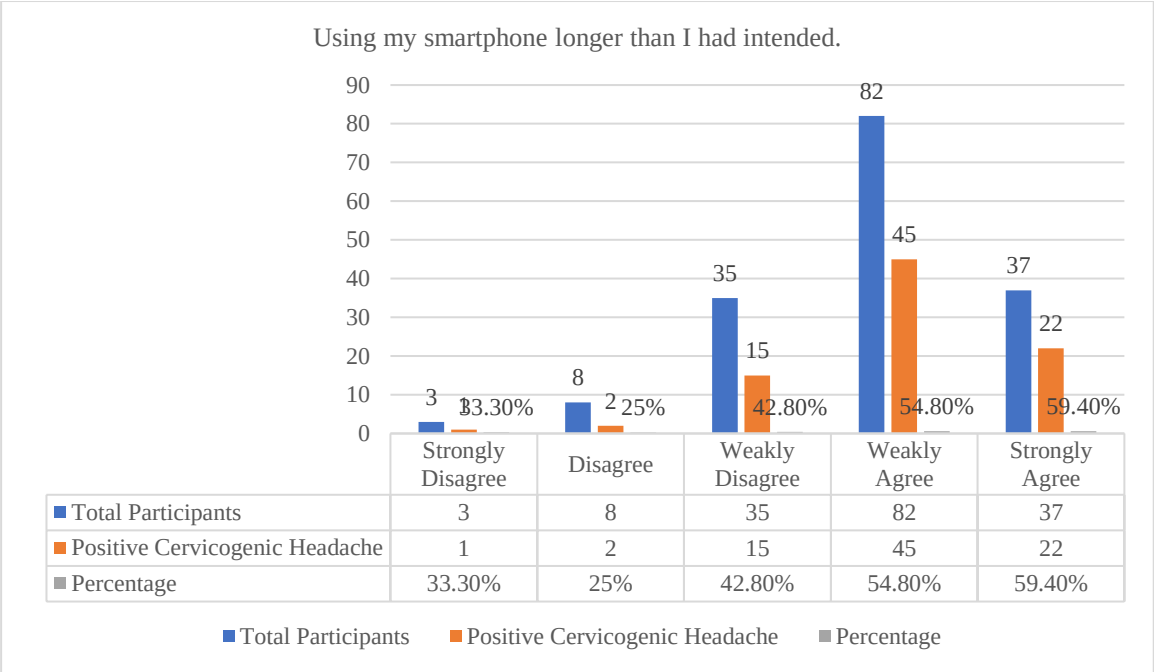
As seen in this graph participants who are having smartphone in their mind even when they are not using it are more prone to Cervicogenic headache.



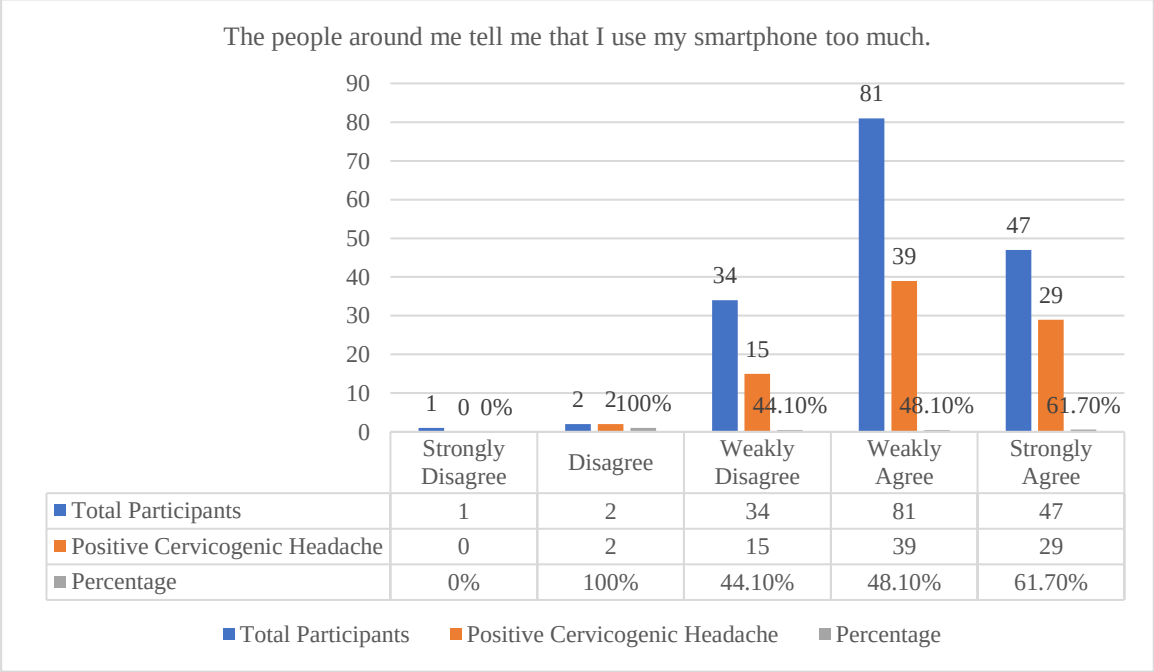
As seen in this graph participants who never give up using their smartphone even when their daily life is greatly affected by it are more prone to Cervicogenic headache.



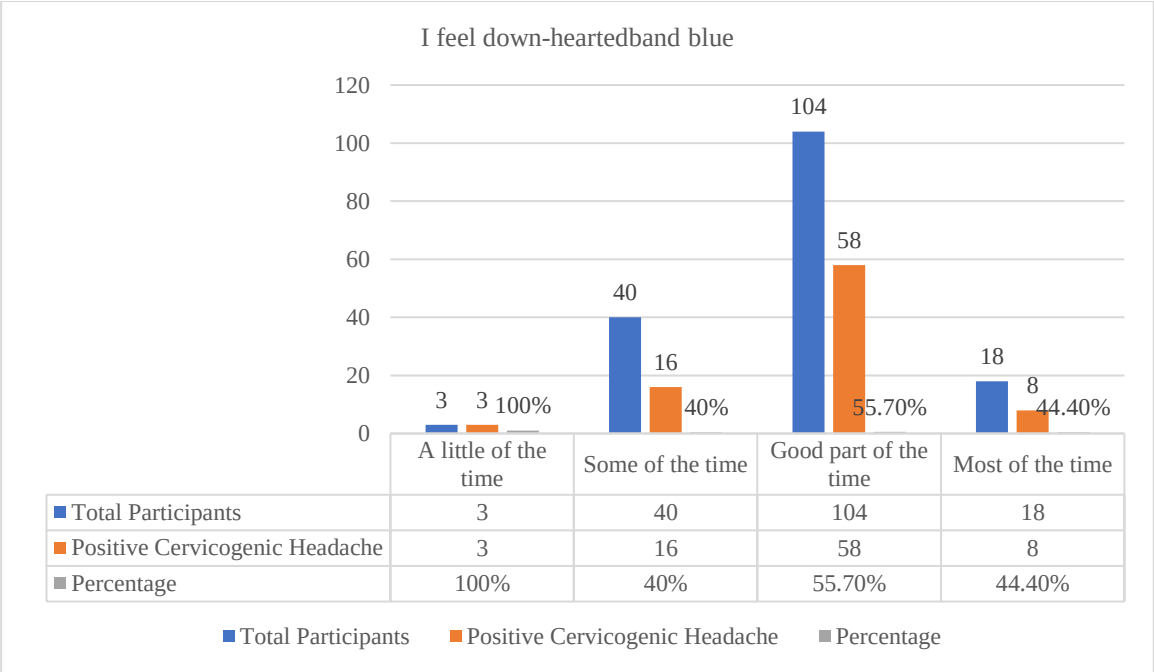
As seen in this graph participants who constantly checking my smartphone so as not to miss conversation between other people on twitter or Facebook are more prone to Cervicogenic headache.



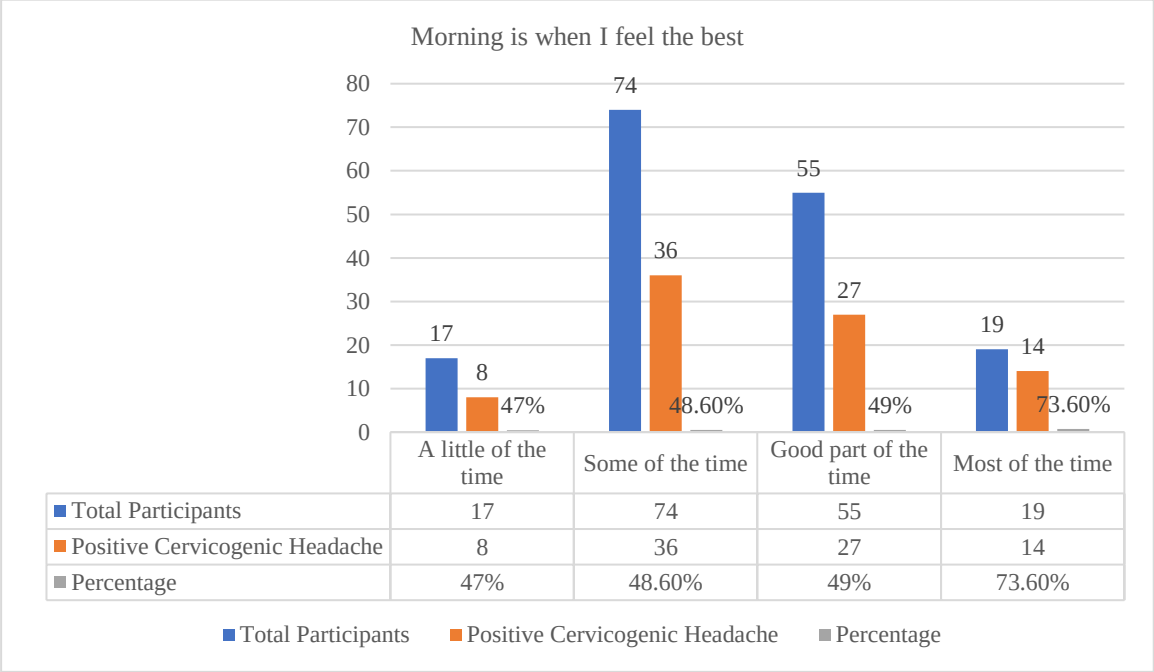
As seen in this graph participants using their smartphone longer than they had intended are more prone to Cervicogenic headache.



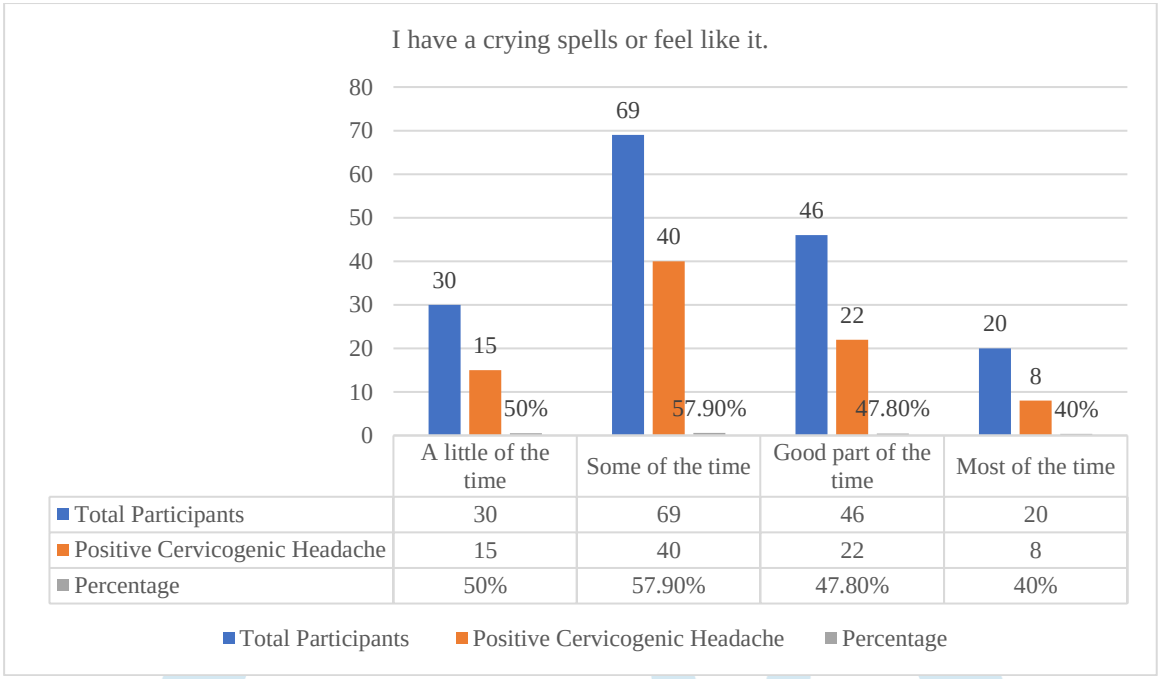
As seen in this graph people around the participants tell them that they use their smartphone too much are more prone to Cervicogenic headache.



As seen in this graph participants who are more prone to cervicogenic headache feels down-hearted and blue in good part of the time.



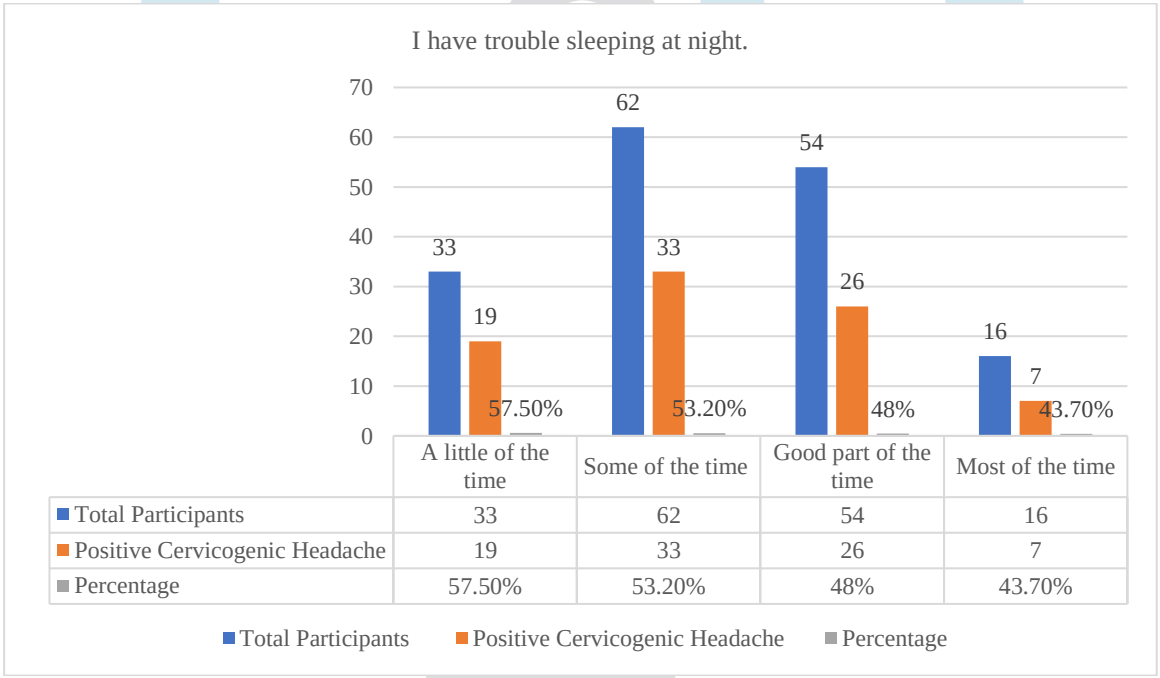
As seen in this graph participants who are more prone to cervicogenic headache in morning they feel the best some of the time.



	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	30	69	46	20
Positive Cervicogenic Headache	15	40	22	8
Percentage	50%	57.90%	47.80%	40%

Total Participants Positive Cervicogenic Headache Percentage

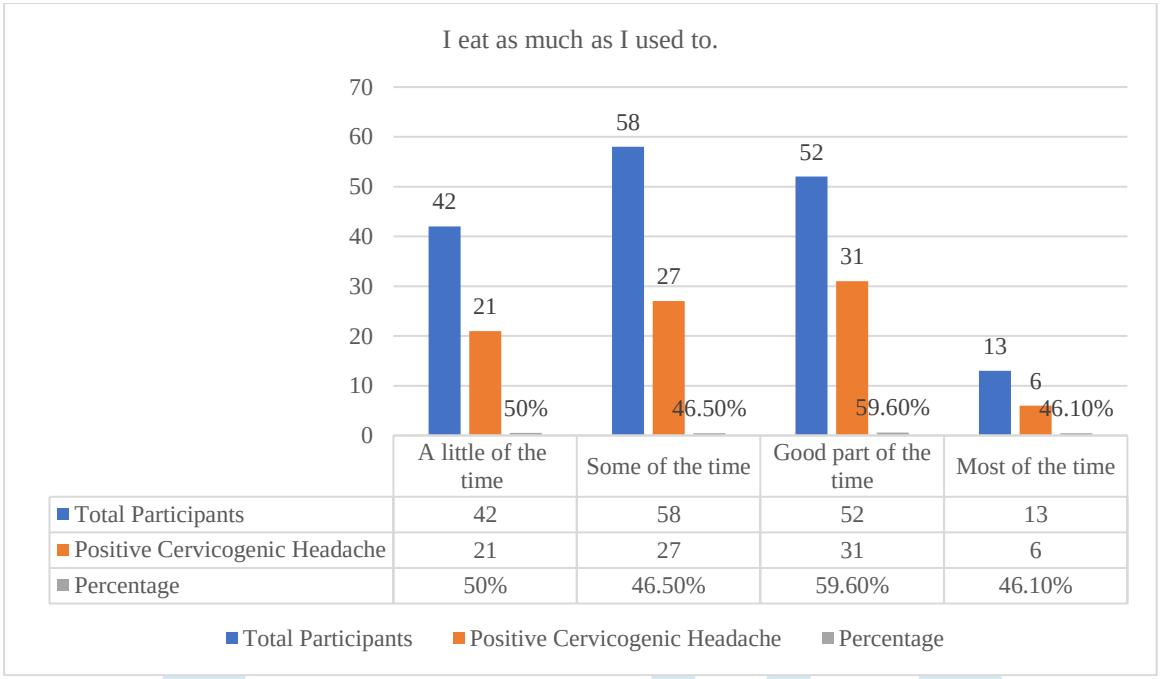
As seen in this graph participants who are more prone to cervicogenic headache have a crying spells or feel like it some of the time.



	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	33	62	54	16
Positive Cervicogenic Headache	19	33	26	7
Percentage	57.50%	53.20%	48%	43.70%

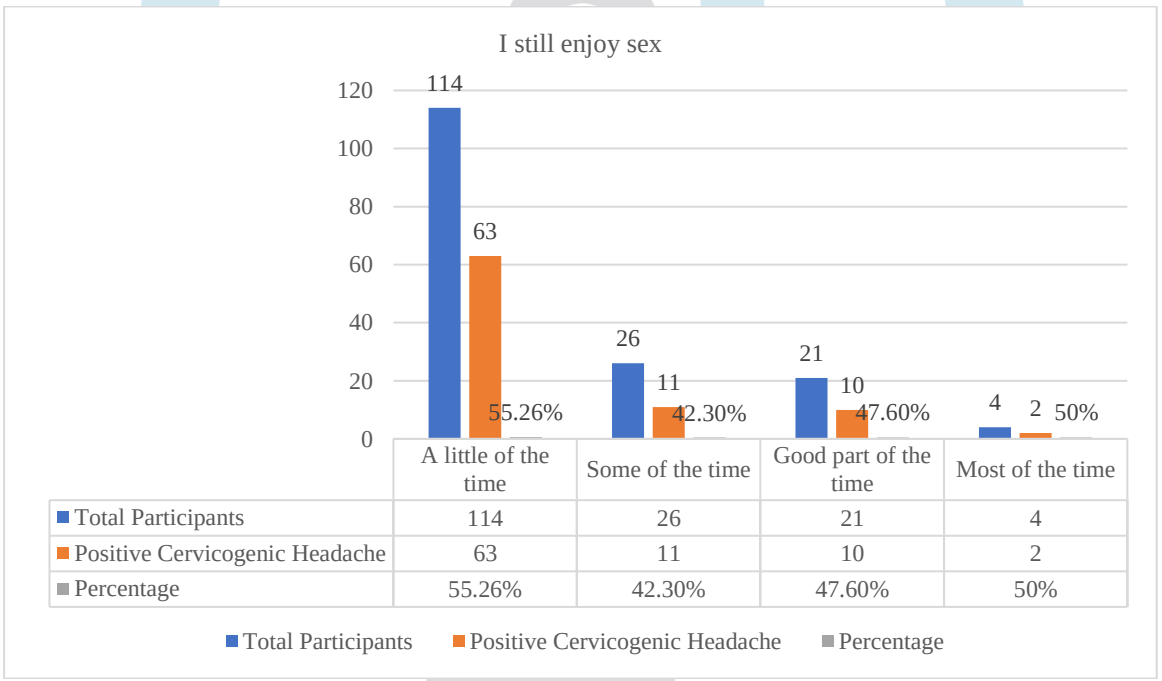
Total Participants Positive Cervicogenic Headache Percentage

As seen in this graph participants who are more prone to cervicogenic headache have trouble sleeping at night, some of the time.



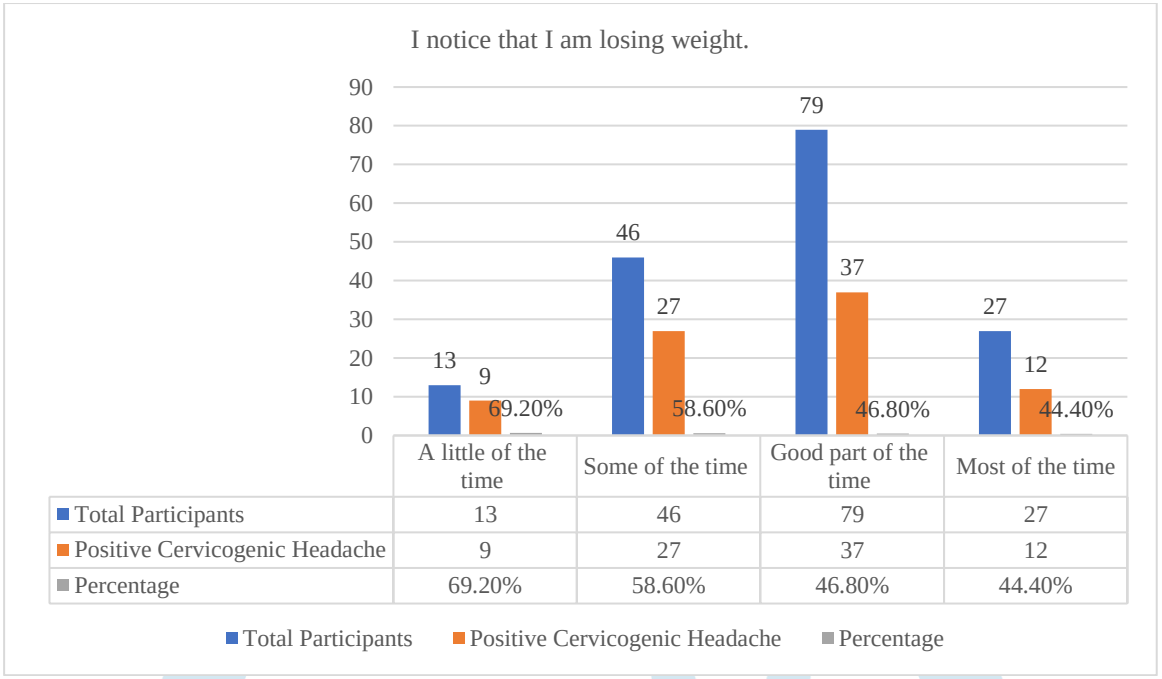
	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	42	58	52	13
Positive Cervicogenic Headache	21	27	31	6
Percentage	50%	46.50%	59.60%	46.10%

As seen in this graph participants who are more prone to cervicogenic headache eat as much as they used to, good part of the time.



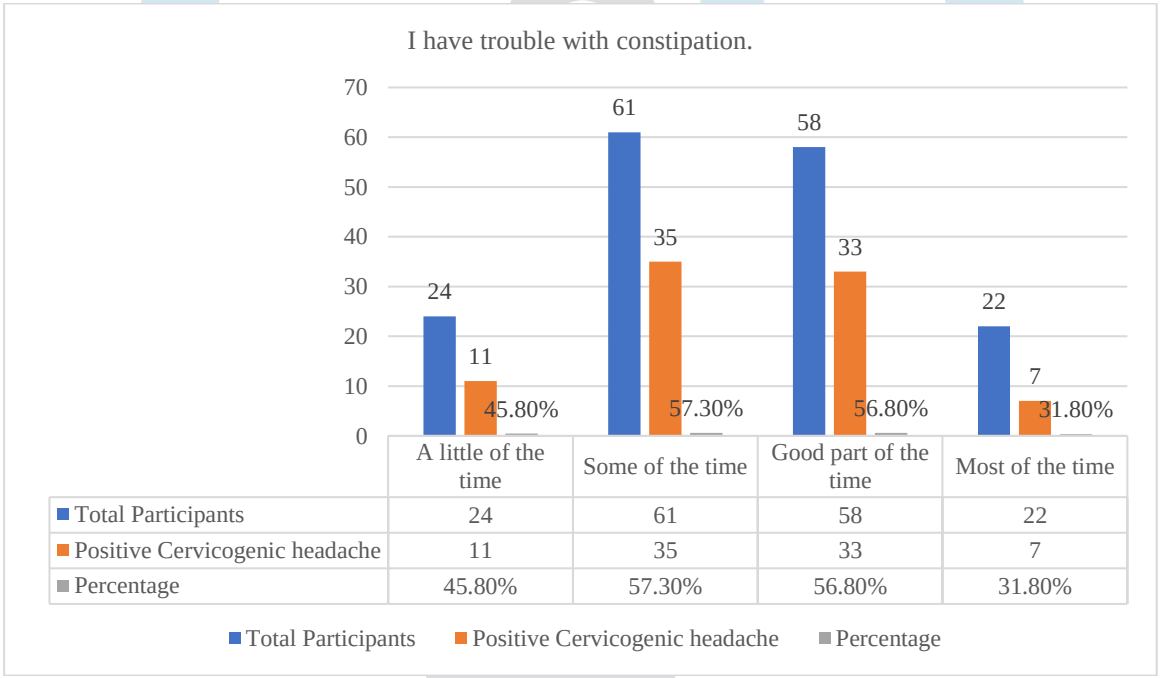
	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	114	26	21	4
Positive Cervicogenic Headache	63	11	10	2
Percentage	55.26%	42.30%	47.60%	50%

As seen in this graph participants who are more prone to cervicogenic headache still enjoy the sex little of the time.



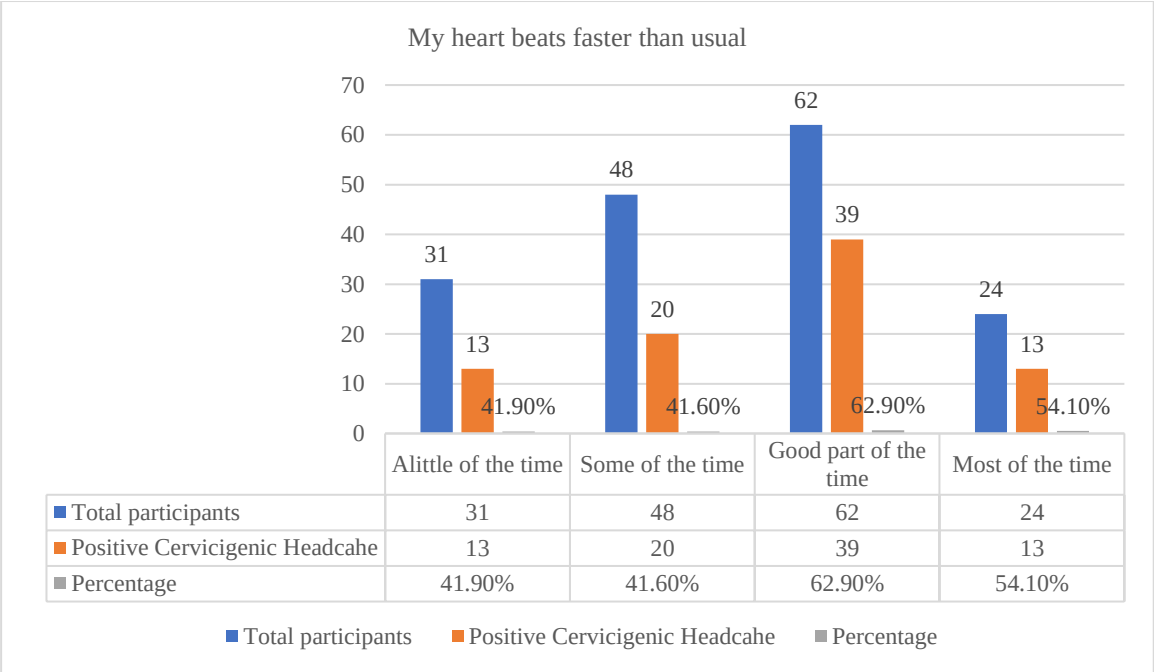
	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	13	46	79	27
Positive Cervicogenic Headache	9	27	37	12
Percentage	69.20%	58.60%	46.80%	44.40%

As seen in this graph participants who are more prone to cervicogenic headache notice that they are losing weight good part of the time.



	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	24	61	58	22
Positive Cervicogenic headache	11	35	33	7
Percentage	45.80%	57.30%	56.80%	31.80%

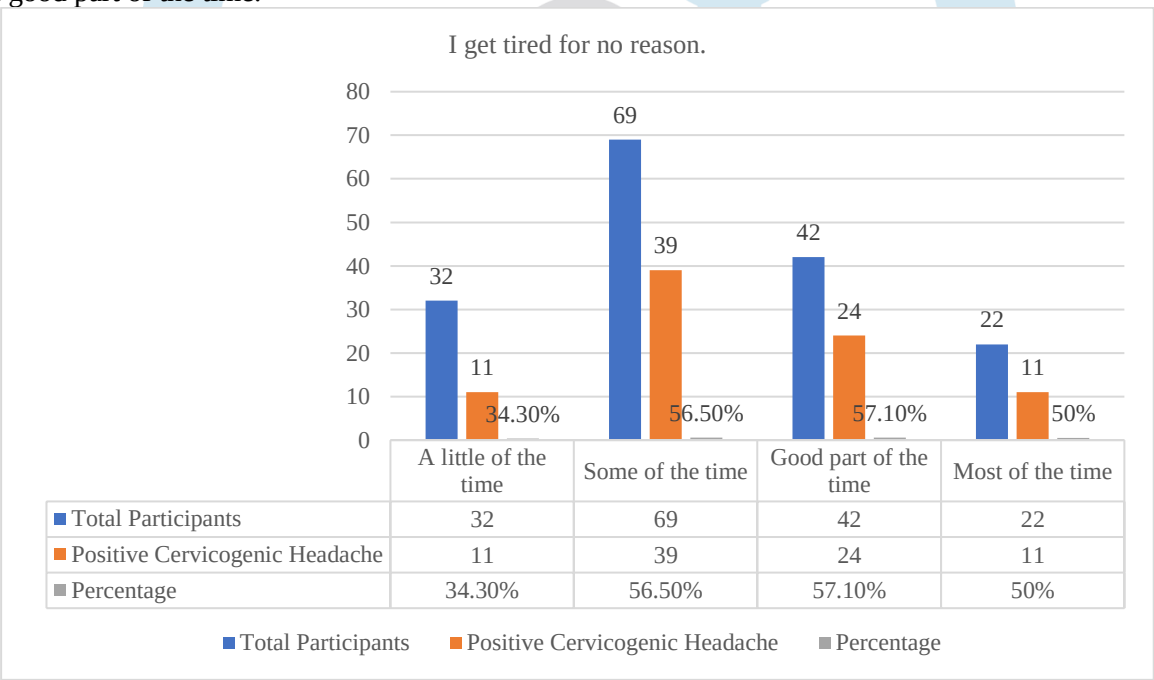
As seen in this graph participants who are more prone to cervicogenic headache having trouble with constipation some of the time.



	Alittle of the time	Some of the time	Good part of the time	Most of the time
Total participants	31	48	62	24
Positive Cervicigenic Headcahe	13	20	39	13
Percentage	41.90%	41.60%	62.90%	54.10%

Total participants Positive Cervicigenic Headcahe Percentage

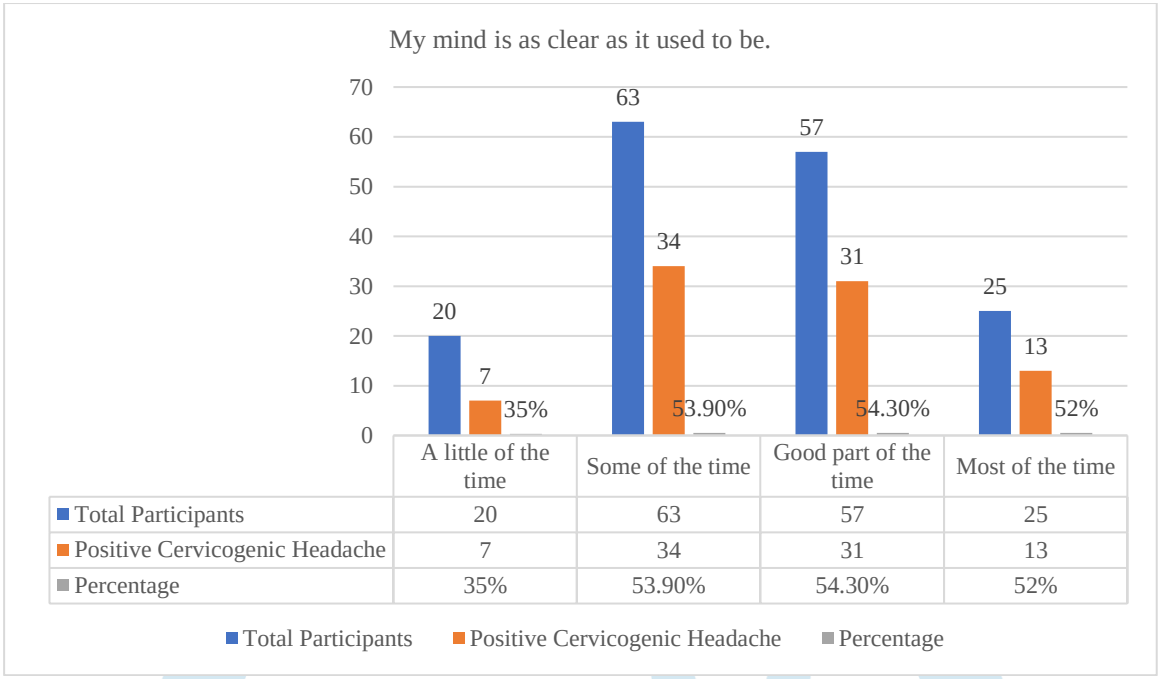
As seen in this graph participants who are more prone to cervicogenic headache they feel their heart beats are faster than usual good part of the time.



	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	32	69	42	22
Positive Cervicogenic Headache	11	39	24	11
Percentage	34.30%	56.50%	57.10%	50%

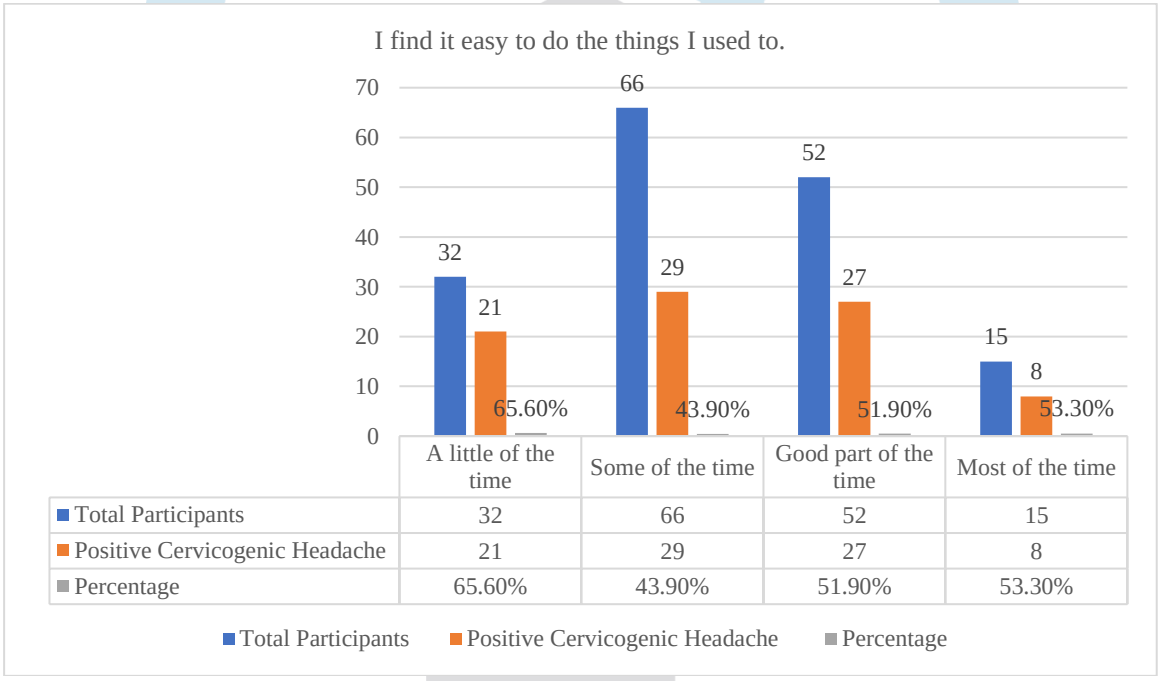
Total Participants Positive Cervicogenic Headache Percentage

As seen in this graph participants who are more prone to cervicogenic headache get tired for no reason some of the time.



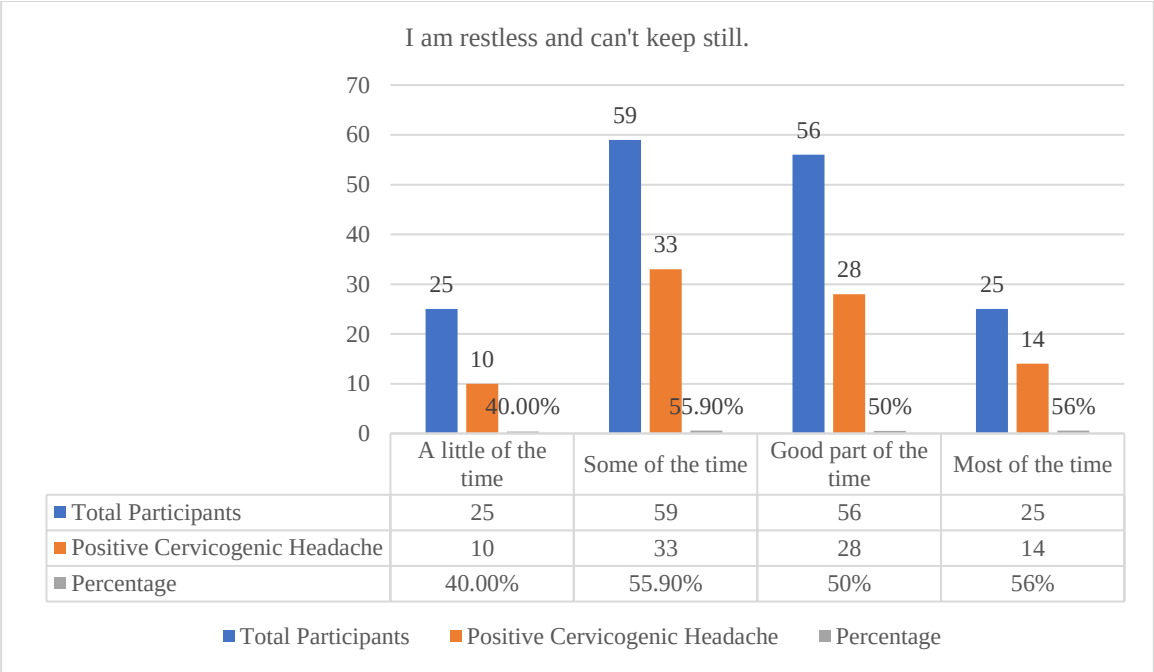
	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	20	63	57	25
Positive Cervicogenic Headache	7	34	31	13
Percentage	35%	53.90%	54.30%	52%

As seen in this graph participants who are more prone to cervicogenic headache some of the time their mind is as clear as it used to be.



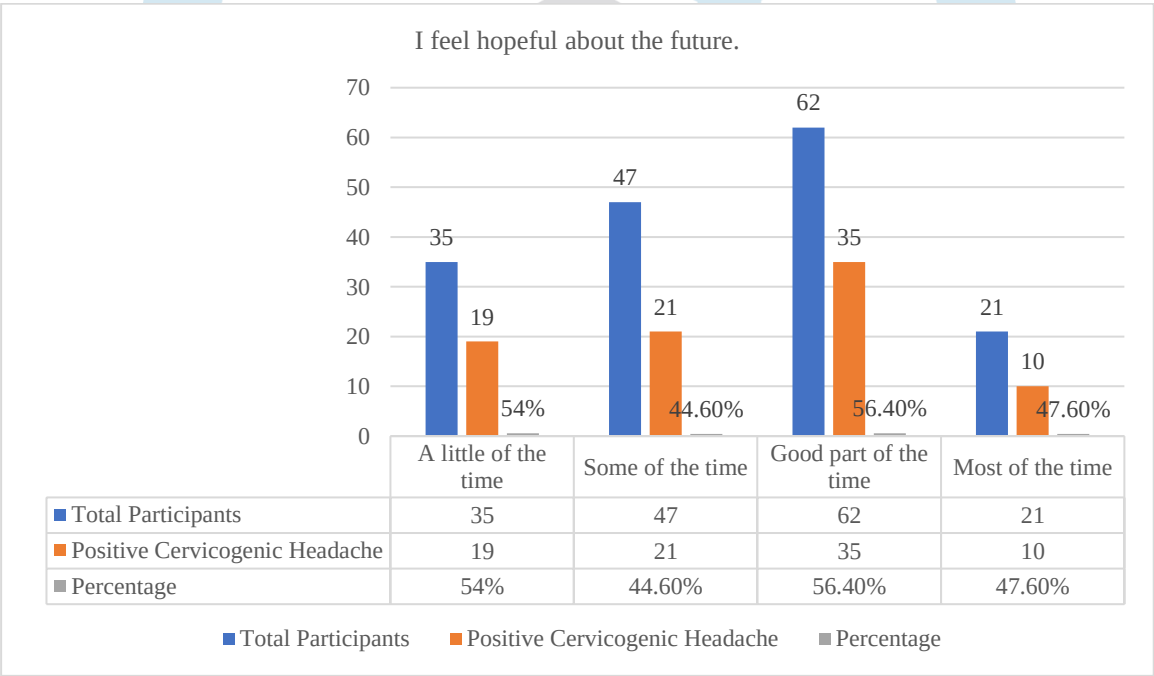
	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	32	66	52	15
Positive Cervicogenic Headache	21	29	27	8
Percentage	65.60%	43.90%	51.90%	53.30%

As seen in this graph participants who are more prone to cervicogenic headache find some of the time easy to do things they used to.



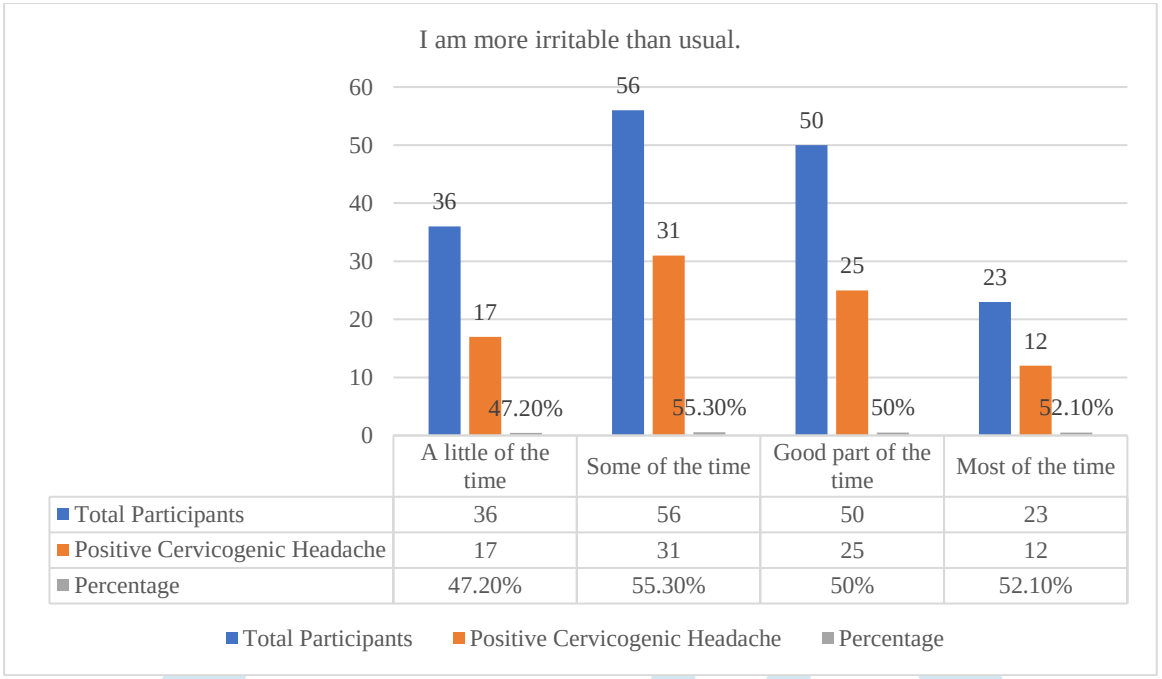
	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	25	59	56	25
Positive Cervicogenic Headache	10	33	28	14
Percentage	40.00%	55.90%	50%	56%

As seen in this graph participants who are more prone to cervicogenic headache feel some of the time restless and can't keep calm.

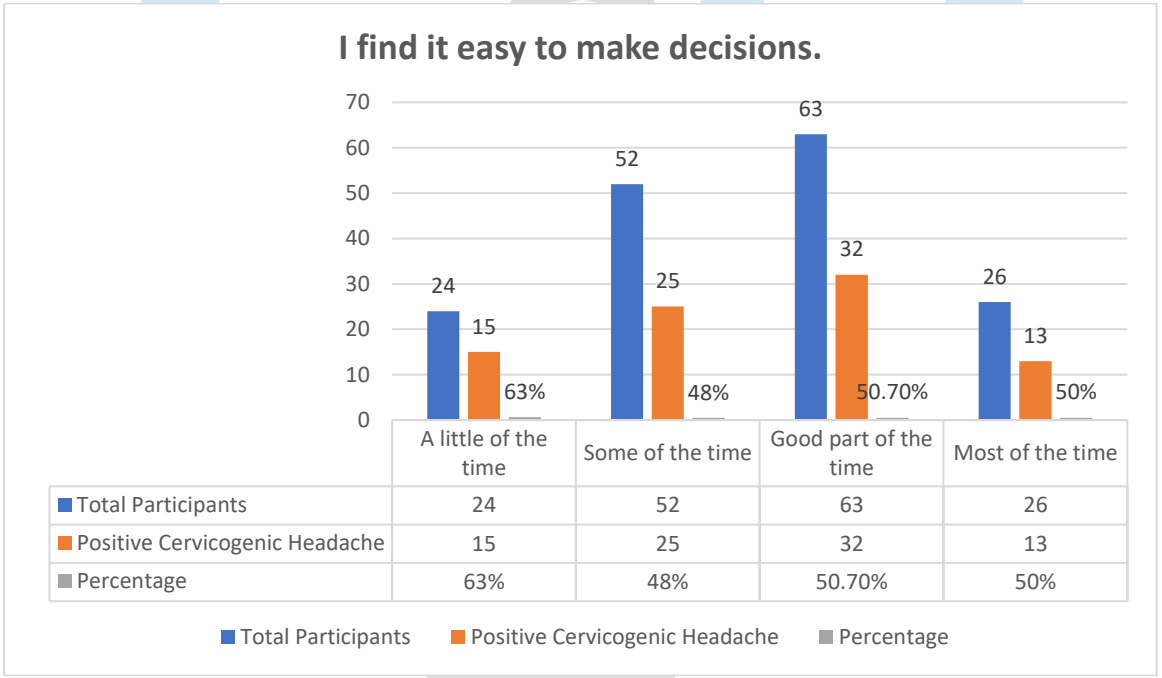


	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	35	47	62	21
Positive Cervicogenic Headache	19	21	35	10
Percentage	54%	44.60%	56.40%	47.60%

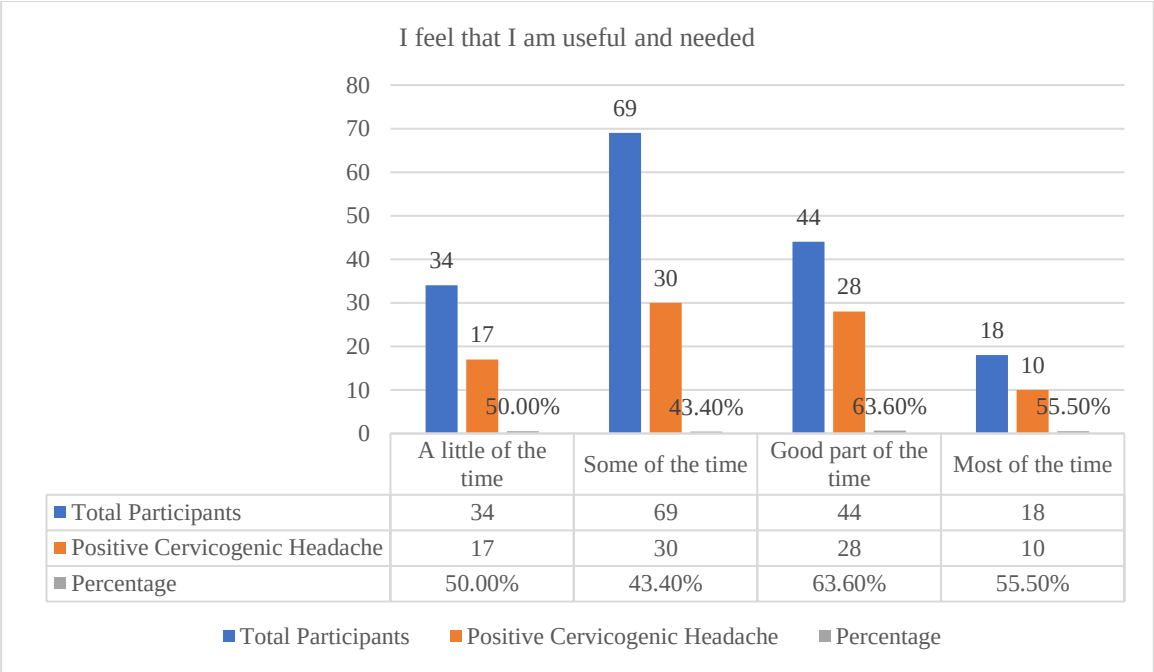
As seen in this graph participants who are more prone to cervicogenic headache feel good part of the time hopeful about the future.



As seen in this graph participants who are more prone to cervicogenic headache feel some of the time that they are more irritable than usual.

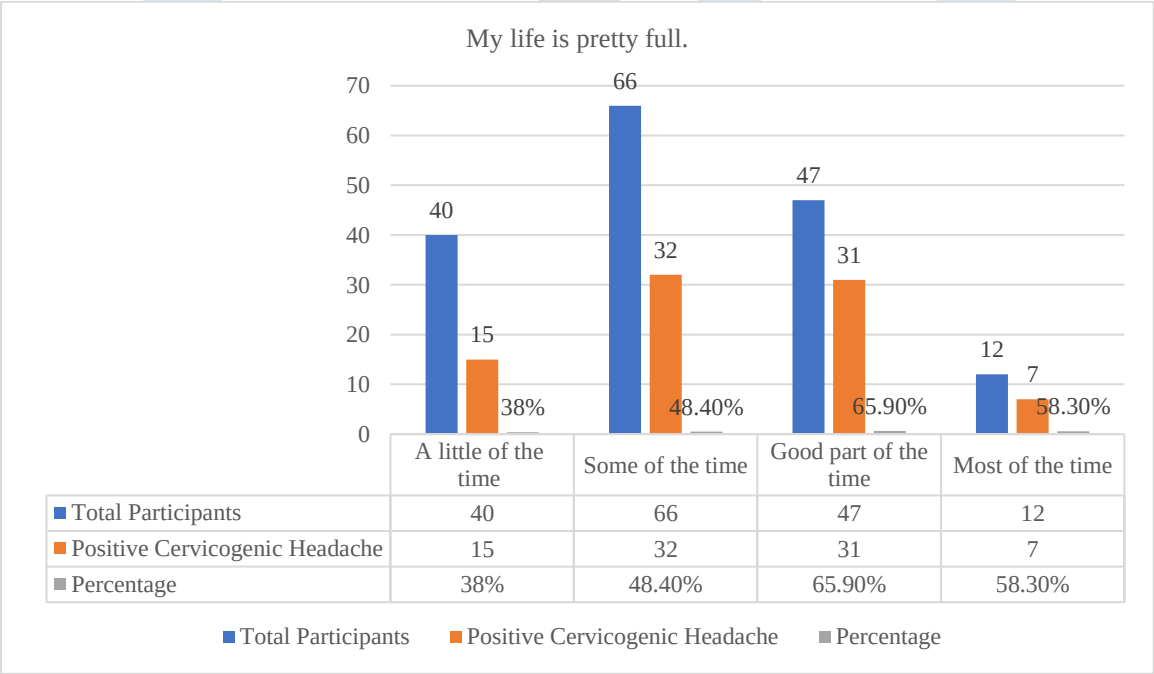


As seen in this graph participants who are more prone to cervicogenic headache feel good part of the time that they find it easy to make decisions.



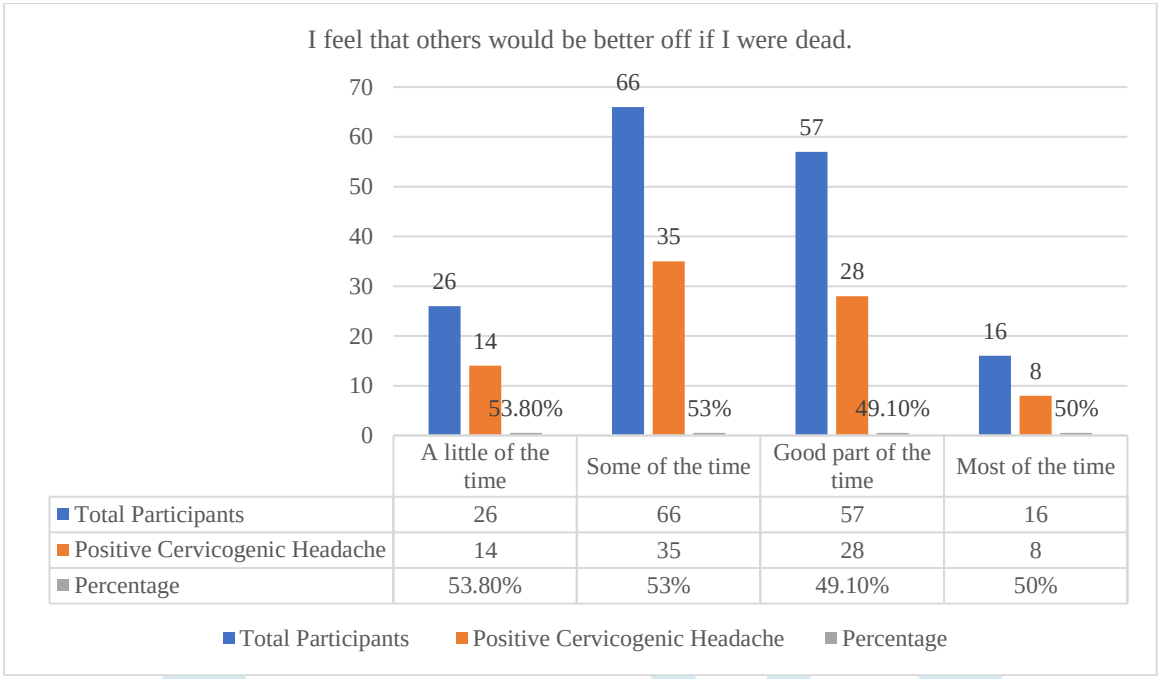
	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	34	69	44	18
Positive Cervicogenic Headache	17	30	28	10
Percentage	50.00%	43.40%	63.60%	55.50%

As seen in this graph participants who are more prone to cervicogenic headache, some of the time feel that they are useful and needed.

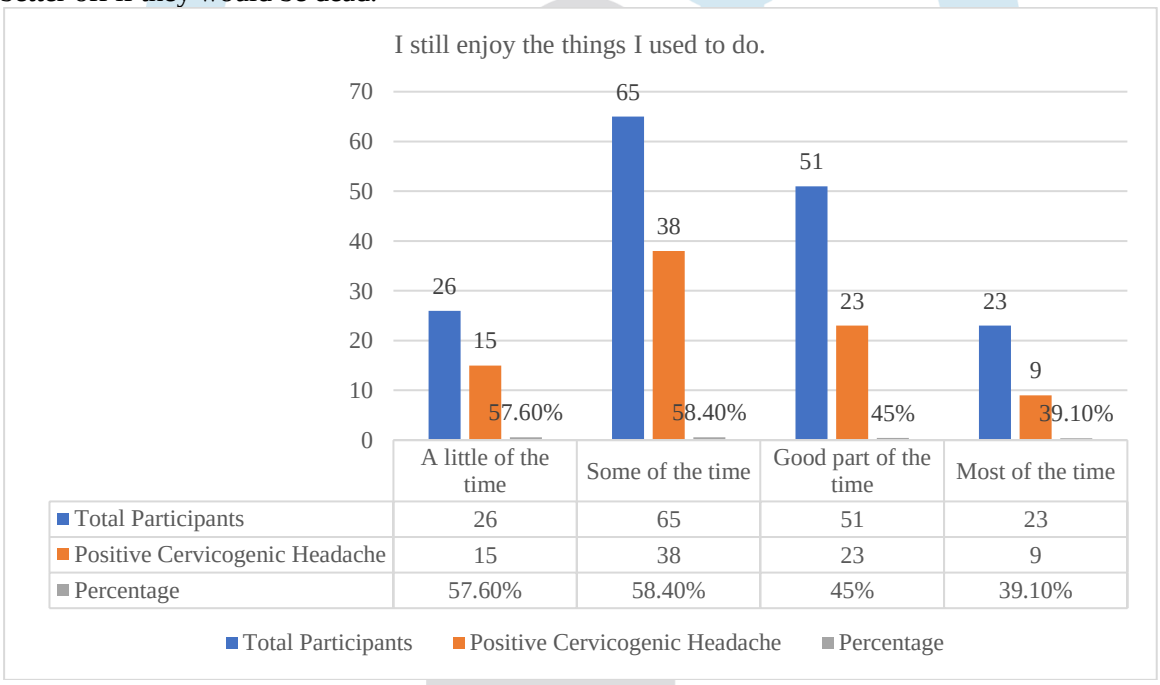


	A little of the time	Some of the time	Good part of the time	Most of the time
Total Participants	40	66	47	12
Positive Cervicogenic Headache	15	32	31	7
Percentage	38%	48.40%	65.90%	58.30%

As seen in this graph participants who are more prone to cervicogenic headache feels some of the time that their life is pretty full.



As seen in this graph participants who are more prone to cervicogenic headache, little of the time they feel that others would be better off if they would be dead.



As seen in this graph participants who are more prone to cervicogenic headache, feel some of the time that they still enjoy the things they used to do.

DISCUSSION

Among headaches, CGH is one of the prevalent problems reported in general population with an estimated range of 2.1% to 20% [(1)]. This study focused on evaluating, recognize, and explain the prevalence of Cervicogenic Headache in Physiotherapy Students and its association with Smart phone Use. This study evaluated the different symptoms which were based on the diagnostic criteria of the Patient rated Cervical flexion rotation test evaluation.

This study evaluated the prevalence of Cervicogenic Headache in Physiotherapy Students and its association with Smart phone Usage and Prevalence of depression in Patients with Cervicogenic Headache. In this study we have use the smart phone addiction scale (SAS), this scale is consisted of 6 factors and 33 items with a six-point Likert scale (1: ‘‘strongly disagree’’ and 6: ‘‘strongly agree’’) based on self-reporting. The six factors were daily-life disturbance, positive anticipation, withdrawal, cyberspace-oriented relationship, overuse, and tolerance [(10)]. Another scale used for evaluating the depression in physiotherapy students with positive cervicogenic headache is Zung Self-Rating Depression Scale (SDS), this scale was designed by W.W. Zung to assess the level of depression for patients diagnosed with depressive disorder. The Zung Self-Rating Depression Scale is a short-self-administered survey to quantify the

depressed status of a patient. There are 20 items on the scale that rate the four common characteristics of depression: the pervasive effect, the physiological equivalents, other disturbances, and psychomotor activities. There are ten positively worded and ten negatively worded questions. Each question is scored on a scale of 1-4 (a little of the time, some of the time, good part of the time, most of the time). The scores range from 25-100. • 25-49 Normal Range • 50-59 Mildly Depressed • 60-69 Moderately Depressed • 70 and above Severely Depressed [(11)].

This current study concluded that the prevalence of cervicogenic headache was 51.8% among Physiotherapy students. This finding is supported by other published articles such as a study article to evaluate the prevalence of cervicogenic headache, reported the prevalence of cervicogenic headache was 64.5% among freelancers and entrepreneurs [(2)] This finding is near the value of the current study. Another study on the prevalence of cervicogenic headaches concluded that 17.8 % of participants were suffering from cervicogenic headaches [(3)]. The reason for this low value as compared to this current study is the difference in population among these two research papers.

Most participants in our study use smartphones and feel pain in wrist and at the back of the neck while using smartphone. Six hours daily use of computer is sufficient to produce postural and ocular syndromes in users. Average discomfort is in 20 minutes [(3)].

In 2005 another study conducted by Necdet Karlı et, al., the purpose of this study was to investigate the prevalence and sociodemographic characteristics of headaches among Turkish adolescents aged 12 to 17 years old in Bursa province of Turkey and result of this study shows that, age and gender appeared to be demographic factors increasing adolescent headache prevalence. Frequent episodic-tension type headache was the most common headache followed by migraine [(9)].

Another study revealed a relatively high (more than two third of patients) prevalence of depression symptoms in patients with a chief complaint of Cervicogenic headache [(4)]. Various other studies on this issue have found varying degrees of depression in headache patients ranging from as low as 3.4% to as high as 78% [(4)]. The primary cause for depression in patients with CGH can be associated to chronic pain and frequency of the symptoms [(4)]. It has also been noted that when a patient is treated with an antidepressant, not only depression but also the headache seems to improve as these are designed to alter neurotransmitter levels [(4)]. Current study concluded that cervical flexion rotation test (CFRT) for cervicogenic headache is 85 were positive and 80 were negative out of 165 physiotherapy students. In 2020 another study was conducted the purpose of this study was to investigate cervicogenic headache in 81 dentists [(8)]. Their results showed that 26.73% dentists had cervicogenic headache [(8)].

Our study has a few limitations as well. There were more female participants than males in our study. We recommend that more studies with much larger sample sizes, are needed aiming to find a cause for the prevalence of Cervicogenic Headache in Physiotherapy Students and its association with Smart phone Usage and Prevalence of depression in Patients with Cervicogenic Headache.

CONCLUSION:

We concluded that the Prevalence of cervicogenic headache for CFRT (cervical flexion rotation test) is 85 were positive and 80 were negative among 165 Physiotherapy students. So, the prevalence of cervicogenic headache was 51.8% among Physiotherapy students. Long hours in front of a smartphone could expose Physiotherapy students to Headache, Neck and Wrist Pain. There is a considerable prevalence of cervicogenic headache among Physiotherapy students.

REFERANCES:

1. Khilji, M., Mufti, R., Shakeel, A., Ali, W., Ishfaq, H. and Jan, M.B.A., 2019. Frequency of cervicogenic headache among students of Rehman Medical Institute Peshawar Khyber Pakhtunkhwa. *Rehman Journal of Health Sciences*, *1*(1), pp.6-8.
2. JAVED, M.T.H., ANAM ABBAS, F.A., AFZAL, R., MUNIR, T. and AZHAR, S., Cervicogenic Headache among Young Adults Using Computers with more than 3 Hours of Screen Time.
3. Afzal, F., Atif, M.M., Kumar, A., Rasul, A., Islam, A. and Nadeem, I., 2020. Cervicogenic headache and neck pain among computer users. *Rawal Medical Journal*, *45*(2), pp.370-370.
4. Rao, K., Anap, D. and Khatri, S., 2013. Cervicogenic Headache and Depression: A Questionnaire Based Survey. *J Pain Relief S*, *2*, pp.2167-0846.
5. Aabrooi, S., Shafiqueii, S., Javediii, A., Fatimaiv, A., Khanv, O. and RiazVi, S., 2022. FREQUENCY OF CERVICOGENIC HEADACHE IN STUDENTS DUE TO USAGE OF SMART DEVICES-CROSS SECTIONAL SURVEY. *Pakistan Journal of Rehabilitation*, *11*(2), pp.36-41.
6. Umar, M., Ali, S.F., Ali, A. and Khitab, U., 2022. Prevalence of Neck Pain and Its Association With Computer Usage in the Academic Staff of the Private Universities of Peshawar. *Rehabilitation Communications*, *1*(01), pp.25-30.
7. Gharote, G., Patel, P. and Bhilare, K., 2023. Prevalence of Cervicogenic Headache in Computer Users in New Normal.

8. Malavde, R. and Salunkhe, P., 2020. Prevalence of Cervicogenic Headache in Dentists. *Indian Journal of Public Health Research & Development*, *11*(5).
9. Karlı, N., Akış, N., Zarifoğlu, M., Akgöz, S., Irgil, E., Ayvacıoğlu, U., Çalışır, N., Haran, N. and Akdoğan, Ö., 2006. Headache prevalence in adolescents aged 12 to 17: a student-based epidemiological study in Bursa. *Headache: The Journal of Head and Face Pain*, *46*(4), pp.649-655.
10. Hamamura, T., Kobayashi, N., Oka, T., Kawashima, I., Sakai, Y., Tanaka, S.C. and Honjo, M., 2023. Validity, reliability, and correlates of the Smartphone Addiction Scale–Short Version among Japanese adults. *BMC psychology*, *11*(1), pp.1-12.
11. Zung, W.W., 1965. A self-rating depression scale. *Archives of general psychiatry*, *12*(1), pp.63-70.