PREVALENCE AND RISK FACTORS OF NECK PAIN AMONG MEDICAL AND HEALTH SCIENCES UNDERGRADUATE STUDENTS IN UNIVERSITI TUNKU ABDUL RAHMAN (UTAR): A CROSS-SECTIONAL STUDY

HOW TIEN YUNN

NUR USHA BT NADAMURNI

PUI SHAN WEN

BACHELOR OF PHYSIOTHERAPY (HONS)

FACULTY OF MEDICINE AND HEALTH SCIENCES

UNIVERSITI TUNKU ABDUL RAHMAN

DECEMBER 2013

(This page is intentionally left blank.)

PREVALENCE AND RISK FACTORS OF NECK PAIN AMONG

MEDICAL AND HEALTH SCIENCES UNDERGRADUATE STUDENTS

IN UNIVERSITI TUNKU ABDUL RAHMAN (UTAR):

A CROSS-SECTIONAL STUDY

By

HOW TIEN YUNN, NUR USHA BT NADAMURNI, PUI SHAN WEN

A thesis submitted to the Department of Physiotherapy, Faculty of Medicine and

Health Sciences.

Universiti Tunku Abdul Rahman,

In partial fulfillment of the requirements for the degree of Bachelor of

Physiotherapy (Hons) in December 2013

ABSTRACT

PREVALENCE AND RISK FACTORS OF NECK PAIN AMONG MEDICAL AND HEALTH SCIENCES UNDERGRADUATE STUDENTS IN UNIVERSITI TUNKU ABDUL RAHMAN (UTAR): A CROSS-SECTIONAL STUDY.

How Tien Yunn, Nur Usha Bt Nadamurni, Pui Shan Wen

Aims:

1) To investigate the prevalence of neck pain among medical and health sciences undergraduate students in UTAR.

2) To investigate risk factors associated with the development of neck pain among medical and health sciences undergraduate students in UTAR.

3) To compare the prevalence between male and female medicine and health sciences undergraduate students in UTAR.

Methods: Out of total of 365 students with mean age of 20.97±2.97 years in faculty of medicine and health sciences, 336 (92.05%) students responded in the survey. A Questionnaire from a previous study was adopted in the survey and the same study was used as a Pilot study. Same questionnaire was created in two

versions for collecting sample which was self-administered either online survey through emails or directly. Data was analyzed using SPSS version 19.

Results: The results states that there is high prevalence of neck pain among the medical and health sciences undergraduate students in UTAR (38.5%). Frequency of neck pain among students before admission was 31% while the frequency of neck pain after admission was 44%. Side of neck (74.3%) was the highest complaint location of pain among all the respondents who have had neck pain. Neck pain most occurred in year 2 students (33.1%) and in MBBS course (58.8%). Highest perceived cause of neck pain among respondents was due to prolonged reading (71.6%) and next was using the computer (70.9%). Most common limitation caused by neck pain was difficulty in concentrating on schoolwork. The female respondents had higher prevalence of neck pain after gaining admission into UTAR than males (29.5% vs. 14.6%).

Conclusion: This study concluded that there is a high prevalence of neck pain among medical and health sciences undergraduate students. Prolonged reading, using the computers and prolonged sitting are the major perceived cause of neck pain. Female undergraduate students were having higher prevalence of neck pain compared to male students.

ACKNOWLEDGEMENT

APPROVAL SHEET

This Research project entitled **"PREVALENCE AND RISK FACTORS OF NECK PAIN AMONG MEDICAL AND HEALTH SCIENCES UNDERGRADUATE STUDENTS IN UTAR: A CROSS-SECTIONAL STUDY"** was prepared by **HOW TIEN YUNN (ID No: 11UMB07294), NUR USHA BT NADAMURNI (ID No: 11UMB05111) and PUI SHAN WEN (ID No: 11UMB03851)** and submitted as partial fulfillment of the requirements for the degree of Bachelor of Physiotherapy at Universiti Tunku Abdul Rahman.

Approved by:

_____ **(Signature)**

(Mr. Smithesh Odathil Kooven)   **Date:…………………..**
Supervisor
Department of Physiotherapy, FMHS, Universiti Tunku Abdul Rahman

_____ **(Signature)**

(Mr. Manoj Abraham manoharlal)   **Date:…………………..**
Co-supervisor
Department of Physiotherapy, FMHS, Universiti Tunku Abdul Rahman

_____ **(Signature)**

(Mr.Pramod Divakara Shenoy)   **Date:…………………..**
Head of the Department
Department of Physiotherapy, FMHS, Universiti Tunku Abdul Rahman

ETHICAL APPROVAL

FACULTY OF MEDICINE AND HEALTH SCIENCES

UNIVERSITI TUNKU ABDUL RAHMAN

Date: 9th DECEMBER 2013

SUBMISSION OF RESEARCH PROJECT

It is hereby certified that **HOW TIEN YUNN (ID No: 11UMB07294), NUR USHA BT NADAMURNI (ID No: 11UMB05111), PUI SHAN WEN (ID No: 11UMB03851)** has completed this thesis/dissertation entitled "PREVALENCE AND RISK FACTORS OF NECK PAIN AMONG MEDICAL AND HEALTH SCIENCES UNDERGRADUATE STUDENTS IN UTAR: A CROSS-SECTIONAL STUDY" under the supervision of Mr Smithesh Odathil Kooven from the Department of Physiotherapy, Faculty of Medical and Health Sciences, and Mr Manojabraham Manoharlal from the Department of Physiotherapy, Faculty of Medicine and Health Sciences.

I understand that the University will upload softcopy of my thesis/dissertation in pdf format into UTAR Institutional Repository, which may be accessible to UTAR community and public.

Yours truly,

_____   _____   _____

(How Tien Yunn)   (Nur Usha Bt Nadamurni)   (Pui Shan Wen)

DECLARATION

We, How Tien Yunn, Nur Usha Bt. Nadamurni and Pui Shan Wen hereby declare that the Research project is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at UTAR or other institutions.

_____   _____   _____

(HOW TIEN YUNN)   (NUR USHA BT NADAMURNI)   (PUI SHAN WEN)

9th DECEMBER 2013

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

UTAR	Universiti Tunku Abdul Rahman
FMHS	Faculty of Medicine and Health Sciences
MBBS	Bachelor of Medicine and Bachelor of Surgery
PS	Bachelor of Physiotherapy
NS	Bachelor of Nursing
TCM	Bachelor of Traditional Chinese Medicine

1.0 INTRODUCTION

According to the International Classification of Functioning, Disability and Health guidelines by Childs and colleagues, neck pain is classified into 4 types; Neck pain with mobility deficits, neck pain with radiating pain, neck pain with movement coordination impairments and neck pain with headache.

Each type of pain experienced by a person can have different causative. For instances, tingling pain that radiates down an arm is suggestive of nerve impingement; while aching pain of slow onset that localizes to the base of the cervical spine suggests muscle or joint movement (Borenstein D. 2013).

Most of the neck pain episodes are caused by mechanical disorders. Mechanical neck pain can further be defined as pain secondary to overuse of normal anatomic structure or pain secondary to trauma or deformity of an anatomic structure; which can be further characterized by exacerbation and alleviation of pain in direct correlation with particular physical activities (Borenstein D. 2013).

Neck pain is a disabling condition with a course marked by periods of remission and exacerbation (Cote et al., 2004). Almost 85% of neck pain may be attributed to chronic stress and strains or acute or repetitive injuries associated with poor posture, anxiety, depression, and occupational or sporting risks (Ho and

Howard, 2011). A history of previous neck injury was a significant risk factor for subsequent neck pain (Croft PR et al., 2001).

During any 6 month period, 54% of adults suffer from neck pain and 4.6 % experience important activity limitations because of neck pain (Cote et al., 1998). According to Bernaard CM. et al, total yearly cost of neck and upper limb symptoms in the Netherlands due to decreased productivity, sick leave, chronic disability for work, and medical costs was 2.1 billion Euros.

The lifetime prevalence has been estimated to be between 67 and 71% indicating that approximately two-thirds of all individuals will experience an episode of neck pain some time in their life (Makelaet al.., 1991; Picavet et al. 2000). Neck pain is most prevalent in middle-aged adults (Boreinstein D.2013).A few studies had proven that the incidence of neck pain is rather higher in women than men (Croft P. R. et al., 2001; Cote et al., 1998).

University students seemed to have a higher risk for developing neck pain (Rose KA, 2000). Some of the perceived causes of neck pain among students are seats without back supports in lectures, long hours of reading, computer use, history of neck pain, posture assumed during lectures, long sitting hours, prolonged standing, type of pillow used when sleeping, prolonged writing, excessive physical activity, stress, prolonged driving and menstruation (Ayanniyi, Mbada and Iroko, 2010). Reading and concentration on school work are mostly

affected among university students with neck pain (Ayanniyi, Mbada and Iroko, 2010).

In a Swedish cohort of university students 15% developed neck or upper back pains during 1- year follow up (Ekman G. et al., 2009). The effect of neck pain has been reported to affect concentration among students and result in diminished academic performance (Rose KA, 2000). In this study we are trying to determine the prevalence and risk factors of neck pain among the medical and health sciences students.

1.1 Operational Definition:

Neck pain: Pain arising from the cervical part of the spine is felt in the neck or back of the head and is projected to the shoulder and upper arm; it is evoked or enhanced by certain movements or positions of the neck and is accompanied by limitation of motion of the neck and by tenderness to palpation over the cervical spine (Samuel M.A, 2009).

Prevalence: According to Mosby's Medical Dictionary (2009), prevalence in epidemiology is the number of all new and old cases of a disease or occurrences of an event during a particular period. Prevalence is expressed as a ratio in which the number of events is the numerator and the population at risk is the denominator. In the case of neck pain, the number of person who is having neck pain is the numerator and population at risk is the medical and health sciences undergraduate students in UTAR.

Risk factors: World Health Organization defined risk factor as any attribute, characteristic or exposure of an individual that increases the likelihood of developing a disease or injury. Some examples of the more important risk factors are underweight, unsafe sex, high blood pressure, tobacco and alcohol consumption, and unsafe water, sanitation and hygiene.

1.2 Objectives

1) To investigate the prevalence of neck pain among medical and health sciences undergraduate students in UTAR.

2) To investigate risk factors associated with the development of neck pain among medical and health sciences undergraduate students in UTAR.

3) To compare the prevalence between male and female medicine and health sciences undergraduate students in UTAR.

1.3 Hypotheses

The hypothesis of this study includes:

1) There is no neck pain among medical and health sciences undergraduate students of UTAR.

2) There are no difference between the prevalence of neck pain in females medical and health sciences undergraduate students when compared to males.

2.0 LITERATURE REVIEW

1.   Bruls et al,(2013) Non-traumatic arm, neck and shoulder complaints: prevalence, course and prognosis in a Dutch university population. The aims of the study are to provide insight into prevalence of complaints of arm, neck or shoulder in a university population, to evaluate the clinical course of these complaints and to identify prognostic factors which influence this course. The results of this study can be used for patient education and management decisions, as well as for the development of interventions.

2.   Alshagga et al, (2013) Prevalence and factors associated with neck, shoulder and low back pains among medical students in a Malaysian Medical College. This study showed that students in clinical years were twice as likely to have musculoskeletal pain during the past week (p=0.015).

3.   Movahhedet al,(2013) Musculoskeletal pain reports among Mashhad Dental Students, Iran. The aim of this study was to assess prevalence of musculoskeletal pain reports and correlated factors among Mahhad Dental School students, Iran. Variables such as gender, academic grade, academic year, clinical working hour, regular exercise times and also pain characteristics including pain duration intensity and frequency were evaluated. Result shown that most prevalent pain locations were chest/shoulder then followed by head/neck. As

conclusion, musculoskeletal pain reports were highly prevalent among dental students. Attention to prevention of musculoskeletal disorders should be considered as priority in dental schools.

4.   Khan (2013) Effect of working characteristics and taught ergonomics on the prevalence of musculoskeletal disorders amongst dental students. The study identifies three body regions with the highest prevalence of work related musculoskeletal disorder amongst students in clinical and non clinical years. Neck, upper back and lower back regions showed the highest prevalence of discomfort in comparison to other body regions. The differences in pain reporting between clinical and non-clinical students with a higher incidence during the clinical years can be attributed to their practice time that is significantly more than the dental students in the non-clinical years in addition to the nature of this clinical exposure. Result of this study showed consistency with previous studies as female dental students showed a higher prevalence of work-related musculoskeletal disorder symptoms than males.

5.   Skillgate et al, (2013) The age- and sex specific occurrence of bothersome neck pain in the general population – results from the Stockholm public health cohort. The objective of this study was to identify the prevalence and incidence as well as the rate of recovery from neck pain in men and women of different ages in general population. The study concluded that bothersome neck pain is common among men and women as well as in middle aged individuals. Women are more

likely to develop it than men and are less likely to recover from such pain. Younger men and women have a higher incidence but often recover from the neck pain than older individuals.

6.   Andersen et al, (2011) Prevalence and anatomical location of muscle tenderness in adults with nonspecific neck/shoulder pain. Purpose of study was to evaluate the prevalence and anatomical location of muscle tenderness in adults with nonspecific neck/shoulder pain. Comparison between gender and eight anatomical neck/shoulder locations was done. In women, the levator scapulae, neck extensors and infraspinatus showed the highest prevalence of severe tenderness. For men, levator scapulae were the highest prevalence of severe tenderness. Conclusion stated that a high prevalence of tenderness exists in several anatomical locations of neck/shoulder pain. Further research should focus on several neck/shoulder muscles rather than only in upper trapezius.

7.   Ayanniyi et al, (2010) Neck pain occurrence and characteristics in Nigerian university undergraduates. The aim of this study was to examine the occurrence and characteristics of neck pain in undergraduate students from university of Ibadan, Nigeria. It was a cross-sectional study conducted among the undergraduate students.

The conclusion is neck pain is common among Nigerian university undergraduate students and affects females than males. The prevalence increased with higher

level of study and commoner among clinical students. Neck pain mostly affects reading and concentration on school work among undergraduate students.

8.   Kanchanomai et al, (2010) Risk factors for the onset and persistence of neck pain in undergraduate students: 1-year prospective cohort study. The aim of this study was to examine the 1-year incidence and persistence of neck pain and to explore its biopsychosocial risk factors in undergraduate students. Among a large sample of undergraduate students, 46% reported neck pain during 1-year period of follow-up. Conclusion was made that an education program should be introduced for undergraduate students regarding how properly to do computer work to avoid neck pain.

9.   Smith and Leggat (2010) Prevalence and distribution of musculoskeletal pain among Australian medical students. The purpose of this research is to investigate the prevalence, distribution, and correlation of musculoskeletal pain among a group of Australian medical students by means of a previously validated questionnaire survey. The conclusion suggested that musculoskeletal pain affects Australian medical students at reasonably high rates.

10.   Lorusso et al, (2010) Musculoskeletal complaints among Italian X-ray technology students: a cross-sectional questionnaire survey. Objective of this study was to estimate the prevalence of musculoskeletal complaints among a

group of X-ray technology students. Results shown that low back pain was the most frequently reported symptom and followed by neck pain. This study also concluded a significant association between poor physical activity and the presence of musculoskeletal disorders in young university students.

11.   Ekman et al, (2009) Analyzing musculoskeletal neck pain, measured as present pain and periods of pain, with three different regression models: a cohort study. The study aims to analyze musculoskeletal neck pain, in a group of young adults. Specific aims were to determine whether psychosocial factors, computer use, high work/study demands, and lifestyle are long term or short term factors for musculoskeletal neck pain, and whether these factors are important for developing or ongoing musculoskeletal neck pain. The study concludes that perceived stress, high work/ study demands and computer use pattern were short term as well as long term risk factors for musculoskeletal neck pain.

12.   Morse et al, (2007) Musculoskeletal disorders of the neck and shoulder in dental hygienists and dental hygiene students. The aims of the study was to (1) test for differences in prevalence of both subjective and objective neck symptoms between dental hygienists, dental assistants and dental hygiene students, (2) to test if higher (longer) exposure result in higher prevalence and (3) to identify risk factors significantly associated with neck MSDs in dental professions and clinical training in order to better target preventive measures. Study result shown that risk factors and both self-reported and physician-diagnosed neck and shoulder

symptoms increase in frequency from students to experienced hygienists, and students have higher prevalence if they are also dental assistants.

13.   Bialocerkowski et al, (2005) Prevalence of and risk factors associated with neck problems in undergraduate physiotherapy students. The purpose of this study was to determine the point prevalence and risk factors associated with neck problems in undergraduate physiotherapy students. Students had completed questionnaire over four recall periods, which are lifetime, previous year, previous months and previous week. Conclusion made was, that students and lecturers should attend to the risk factors associated with developing neck problems in undergraduate physiotherapy students.

14.   Croft et al, (2000) Risk factors for neck pain: a longitudinal study in the general population. The aim of this research was to examine the 1-year cumulative incidence of episodic neck pain and to explore its associations with individual risk factors, including a history of previous neck injury. In this research, they have carried out a prospective study in a general population sample and demonstrated that established risk factors for chronic pain predict episodes of neck pain, and shown that history of neck injury is independent and distinct risk factors.

15.   Gharib N. M. M. and Hamid N. S. (2013). Prevalence of mechanical neck pain in Taif university female students: a survey study. This study aimed to

determine the prevalence and risk factors of neck pain in undergraduate students from Taif University in Saudi Arabia. They had included students from faculty of applied medical sciences and faculty of science which a total of 300 female students were taken. They had a self administered questionnaire including demographic factors, risk factors and neck pain during the previous year. Besides that, they also evaluated the range of motion of cervical spine and included a neck disability questionnaire. All in all, they had 54% of the undergraduate university students reported experiencing neck pain during the previous one year that persists more than 24 hours. However, they had limitations of not confirming the risk factors of the high prevalence of neck pain and the cause and effect relationship is not established as well as recall bias. Furthermore, this study only includes female students and was done only in one university student which cannot be representative of all the Saudi University students. Last but not least, they had included a suggestion on indentifying the prevalence and risk factors in Saudi university students including male and females.

3.0 MATERIALS AND METHODS

This study was performed after obtaining ethical approval from the ethical committee, Universiti Tunku Abdul Rahman, Malaysia. The approval from the UTAR scientific and ethical review committee together with the informed consent of the respondents were obtained. There were a total of 365 full-time undergraduate students from FMHS, UTAR. However, only 336 participants responded and 29 of the participants did not participate. The questionnaires were delivered in two ways, printed/written and online through emails. The printed/written survey was conducted within the Faculty of Medical and Health Sciences, at UTAR Sungai Long Campus. For the online survey, the researcher used online software, "Google Drive" to create the online survey specifically for all the year 3 and year 4 MBBS students since they were not available in the campus because of their clinical training in hospitals.

In order to participate in this research, participants must be a medical and health sciences undergraduate student in UTAR. Participants can either be male or female. Last but not least, participants must be a full-time student. The study design used in this research is cross-sectional study design. Self administered questionnaire from a previous study was used. The duration of study period was between 14th of October till 29th of November 2013.

Researchers had distributed the questionnaires to participants from all the four courses which are Bachelor of Medicine and Bachelor of Surgery (MBBS), Bachelor of Nursing, Bachelor of Chinese Medicine and Bachelor of Physiotherapy. The questionnaires were distributed to the participants during their break time. Before distributing the questionnaire, the researchers gave a brief explanation regarding the information sheet and the purpose of the study. Participants were also reminded to answer the questions accordingly and any questions regarding the questionnaire can be raised on the spot. On the other hand, an online survey of the questionnaire was also provided for all year 3 and year 4 MBBS students who were not available in UTAR Sg Long campus due to their practical training in hospitals. The universal resource locator (URL) of the online questionnaires was sent to one of the representative from MBBS and was posted on their Facebook group page. However, due to low response rate, the URL of the online questionnaire was sent individually to participants Facebook accounts.

The questionnaire took approximately 10 minutes to be completed by the participants and was returned back to the researchers immediately upon completion. The researcher had to check through the questionnaires upon receiving it to identify any missing information or errors.

Questionnaire consists of four pages. First page consist of information sheet of the study and consent form for the participants. Second page contains demographics characteristics of subject and questions about prevalence of neck

pain. Third and fourth page consist of question about intensity and area of pain of participants and perceived causes of their neck pain.

3.1 Analysis:

Microsoft Excel was used in data entry while SPSS 19.0 software was used in analyzing the results of data. Frequency, percentages, mean and standard deviation were used to calculate the data.

4.0 RESULTS

The participant's age ranged from 18 to 46 years old with mean age of 20.97±2.59 years. According Figure 4.1, the current frequency of neck pain is 38.5%. The frequency of neck pain was more for female students (25.7%) compared to male students (12.8%) (table 4.1). Prevalence of neck pain after gaining admission into UTAR for female is comparatively higher than males (29.5% vs. 14.6%) as shown in table 4.2.

The mean pain score from the pain intensity scale among all the respondents are 3.52±1.73. The reported frequency of neck pain before admission is 31% as shown figure 4.2 while the reported frequency of neck pain after admission is 44% as shown in figure 4.3.

Table 4.3 shows the location and percentages of neck pain among the respondents. The most common location of pain was at the side of the neck (74.3%) followed by back of neck (62.8 %), and both shoulders (42.6%). The least area of pain felt was at the arm (6.1%).

Figure 4.4 showed the frequency distribution of the study of the respondents with neck pain. Majority of the neck pain cases are in the second year of study (33.1%) and the least neck pain cases were respondents from year 4

(12.8%). Figure 4.5 showed the frequency distribution of the courses of the respondents with neck pain. The highest percentage of respondents with neck pain were from MBBS (58.8%), followed by TCM (21.6%), PS (18.9%) and the least respondents with neck pain were NS (0.7%).

Table 4.4 shows the perceived cause of neck pain among the respondents. Among all the courses, prolonged reading had a highest percentage for the perceived cause of neck pain (71.6%), followed by computer use (70.9%), prolonged sitting (63.5%) and the least perceived cause was sport injury which is 0.7%.

Table 4.5 showed the prevalence of neck pain according to year of study and hours of schoolwork per week. Respondents who spend 40 to less than 50 hours duration of school work per week showed the highest frequency of having neck pain with majority consisting of year 2 students.

Table 4.6 showed the prevalence of neck pain according to courses and hours of school work each week. Among the four courses, MBBS had the highest percentage of neck pain (58.8%) which most of them spend at least 40 to less than 50 hours doing school work per week (21.6%).

Table 4.7 showed the prevalence of neck pain according to year of study and reading hours each week. Year 2 respondents spend the longest duration of 4 hours and above in each reading session (4.7%) which leads to the highest percentage of 33.1% in prevalence of having neck pain.

Table 4.8 showed the limitation of activities due to neck pain. The highest percentage of limited activity due to neck pain was concentrating in school work (69%). This is followed by reading having a percentage of 66.7% and sleeping (27.0%). Social recreational activities were the least limiting activity due to neck pain (20.6%). There is high percentage (91.9%) of students who have neck pain does not seek for medical care as shown in Figure 4.6, and among these students, female occupy much more percentage than male students as in Table 4.9.

From figure 4.7, there is less percentage of respondents (10.1%) having chronic type of neck pain. Female has double the percentage of chronic neck pain when compared to male (6.8% Vs 3.4%) undergraduate students as shown in table 4.10.

Current frequency of students who have neck pain
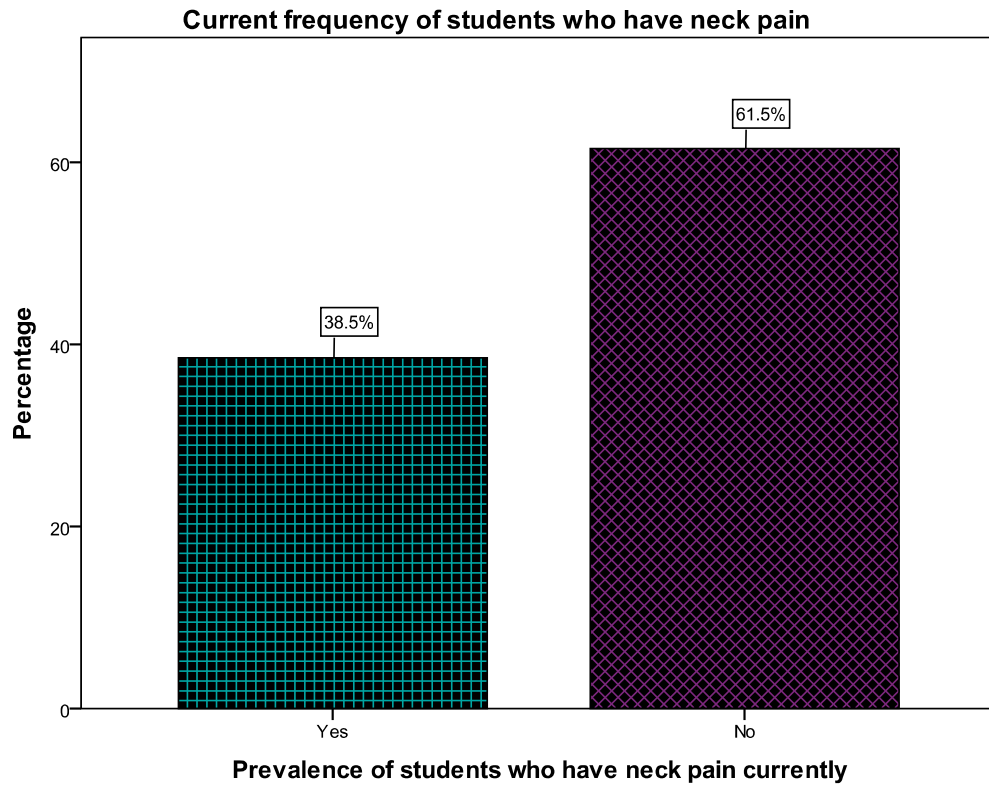
Fi

gure 4.1

Gender difference among prevalence of students who currently having neck pain

		Gender		
		Female	Male	Total
Students who currently have neck pain	Yes	38	19	57
		25.7%	12.8%	38.5%
	No	61	30	91
		41.2%	20.3%	61.5%
Total		99	49	148
		66.9%	33.1%	100.0%

Table 4.1

\

Prevalence of neck pain of students before gaining admission into UTAR

Yes
No

31.0%

69.0%
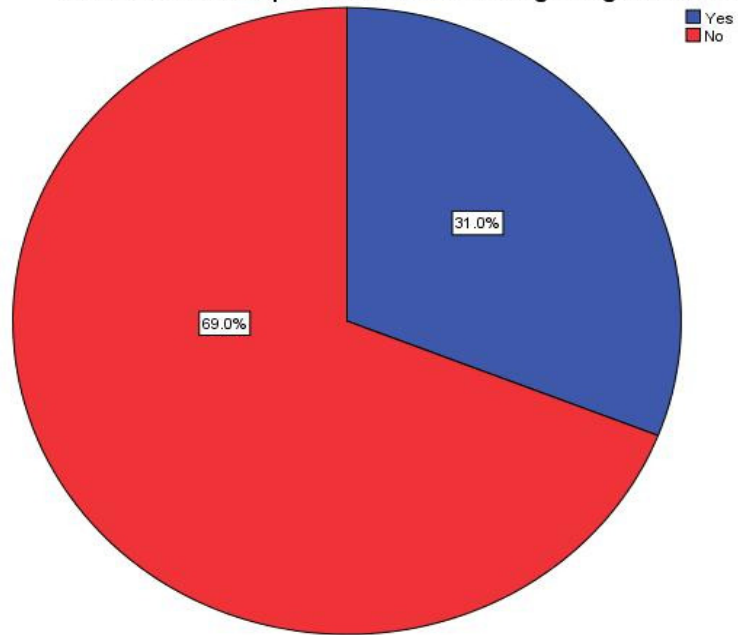
Figure 4.2

Prevalence of neck pain of students after gaining admission into UTAR

Yes
No

44.0%

56.0%
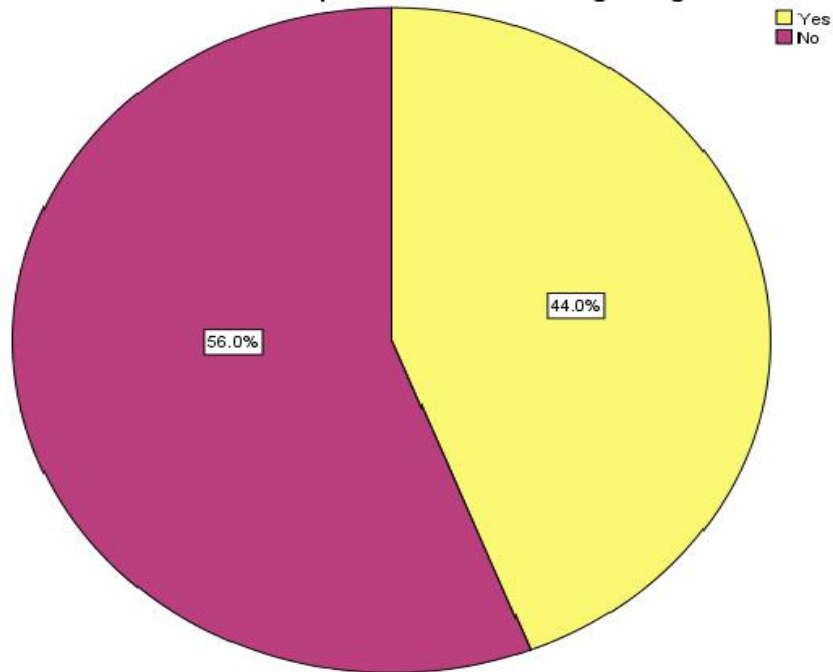
Figure 4.3

Prevalence of neck pain of students after gaining admission into UTAR

		Gender		Total
		Female	Male	
Prevalence of neck pain of students after gaining admission into UTAR	Yes	99	49	148
		29.5%	14.6%	44.0%
	No	125	63	188
		37.2%	18.8%	56.0%
Total		224	112	336
		66.7%	33.3%	100.0%

Table 4.2

Percentages of location of neck pain among the respondents

		Responses		Percent of Cases
		N	Percent	
Location of pain	Both shoulder	63	18.3%	42.6%
	Radiating to the Arm	9	2.6%	6.1%
	One shoulder	45	13.1%	30.4%
	Side of neck	110	32.0%	74.3%
	Back of neck	93	27.0%	62.8%
	Head	24	7.0%	16.2%
Total		344	100.0%	232.4%

Table 4.3

Frequency distribution of the level of study of the respondents with neck pain

Figure 4.4

Frequency distribution of the course of the respondents with neck pain
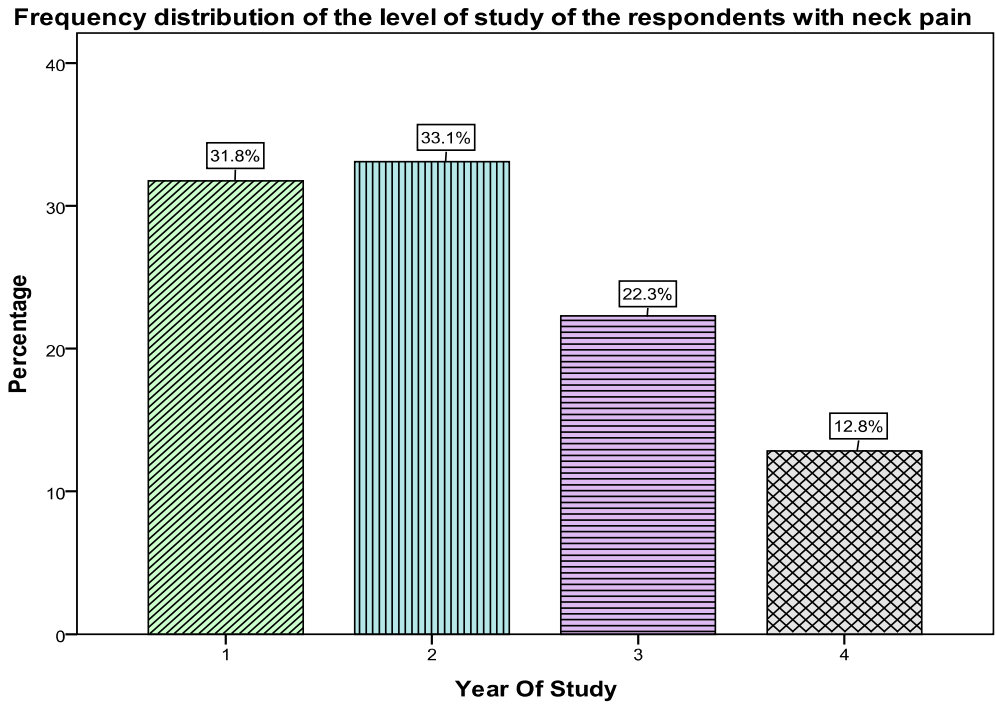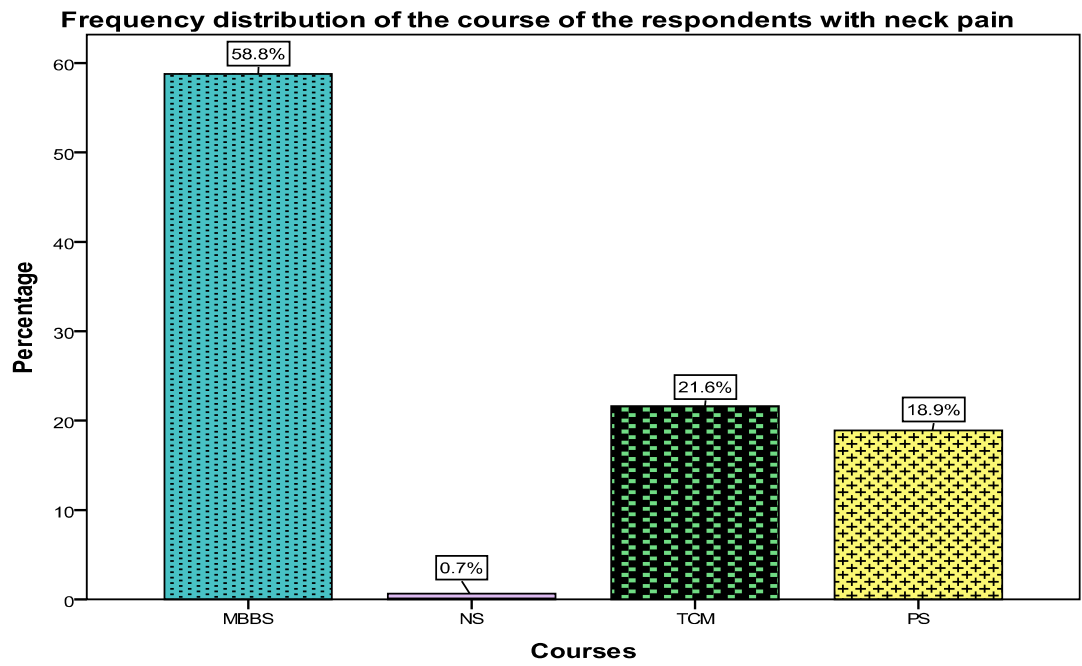
Figure 4.5

Reported perceived causes of neck pain among the respondents

		Responses		Percent of
		N	Percent	Cases
Causes of neck pain	Prolonged reading	106	22.2%	71.6%
	Using the computers	105	22.0%	70.9%
	Posture assumed during lectures	71	14.9%	48.0%
	Prolonged sitting	94	19.7%	63.5%
	Prolonged standing	15	3.1%	10.1%
	Previous neck injury	9	1.9%	6.1%
	Stress	2	.4%	1.4%
	Driving	2	.4%	1.4%
	Sports injury	1	.2%	.7%
	Sleeping posture	6	1.3%	4.1%
	Type of pillow used when sleeping	66	13.8%	44.6%
Total		477	100.0%	322.3%

Table 4.4

Difference of level of study and hours of schoolwork per week among prevalence of students who have neck pain

		Year Of Study				
		1	2	3	4	Total
Duration of school work per week	1 to less than 10 hours	4	7	2	0	13
		2.7%	4.7%	1.4%	.0%	8.8%
	10 to less than 20 hours	20	2	2	5	29
		13.5%	1.4%	1.4%	3.4%	19.6%
	20 to less than 30 hours	12	6	10	1	29
		8.1%	4.1%	6.8%	.7%	19.6%
	30 to less than 40 hours	4	12	9	3	28
		2.7%	8.1%	6.1%	2.0%	18.9%
	40 to less than 50 hours	6	13	9	10	38
		4.1%	8.8%	6.1%	6.8%	25.7%
	50 hours and above	1	9	1	0	11
		.7%	6.1%	.7%	.0%	7.4%
Total		47	49	33	19	148
	% of Total	31.8%	33.1%	22.3%	12.8%	100.0%

Table 4.5

Course difference and hours of schoolwork per week among prevalence of students who have neck pain

		Course				Total
		MBBS	NS	TCM	PS	
Duration of school work per week	1 to less than 10 hours	5	0	2	6	13
		3.4%	.0%	1.4%	4.1%	8.8%
	10 to less than 20 hours	14	1	5	9	29
		9.5%	.7%	3.4%	6.1%	19.6%
	20 to less than 30 hours	15	0	8	6	29
		10.1%	.0%	5.4%	4.1%	19.6%
	30 to less than 40 hours	15	0	10	3	28
		10.1%	.0%	6.8%	2.0%	18.9%
	40 to less than 50 hours	32	0	2	4	38
		21.6%	.0%	1.4%	2.7%	25.7%
	50 hours and above	6	0	5	0	11
		4.1%	.0%	3.4%	.0%	7.4%
Total		87	1	32	28	148
	% of total	58.8%	.7%	21.6%	18.9%	100.0%

Table 4.6

Difference of level of study and duration of each reading session among prevalence of students who have neck pain

		Year Of Study				
		1	2	3	4	Total
Duration of each reading session	less than 1 hours	9 6.1%	12 8.1%	10 6.8%	1 .7%	32 21.6%
	1 to less than 2 hours	23 15.5%	20 13.5%	13 8.8%	8 5.4%	64 43.2%
	2 to less than 3 hours	8 5.4%	10 6.8%	5 3.4%	7 4.7%	30 20.3%
	3 to less than 4 hours	3 2.0%	0 .0%	4 2.7%	2 1.4%	9 6.1%
	4 hours and above	4 2.7%	7 4.7%	1 .7%	1 .7%	13 8.8%
Total		47	49	33	19	148
	% of total	31.8%	33.1%	22.3%	12.8%	100.0%

Table 4.7

Reported limitation due to neck pain

		Responses		Percentage of Cases
		N	Percentage	
Limiting activity due to pain	Housework	29	11.2%	23.0%
	Social recreational activities	26	10.0%	20.6%
	Reading	84	32.3%	66.7%
	Sleeping	34	13.1%	27.0%
	Concentrating on your school work	87	33.5%	69.0%
Total		260	100.0%	206.3%

Table 4.8

Reported limitation due to neck pain

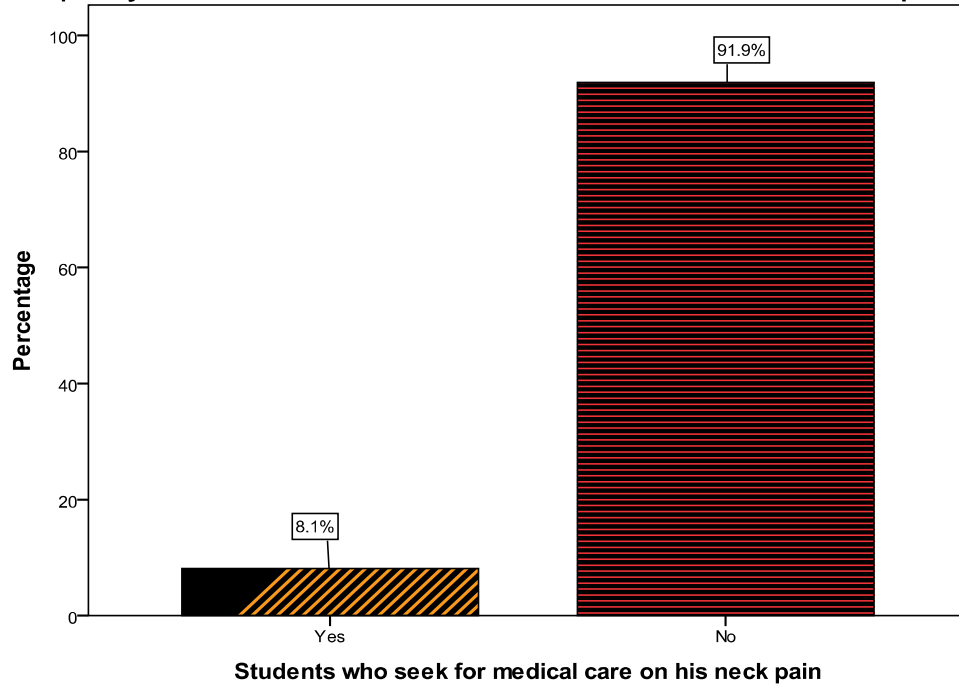|		Responses		Percentage of
		N	Percentage	Cases
Limiting activity due to pain	Housework	29	11.2%	23.0%
	Social recreational activities	26	10.0%	20.6%
	Reading	84	32.3%	66.7%
	Sleeping	34	13.1%	27.0%
	Concentrating on your school work	87	33.5%	69.0%
Total		260	100.0%	206.3%

Frequency distribution of students who seek for medical care on his neck pain

Figure 4.6

Gender difference among prevalence of students who seek for medical care

		Gender		Total
		Female	Male	
Students who seek for medical care on his neck pain	Yes	9	3	12
		6.1%	2.0%	8.1%
	No	90	46	136
		60.8%	31.1%	91.9%
Total		99	49	148
		66.9%	33.1%	100.0%

Table 4.9

Figure 4.7

28
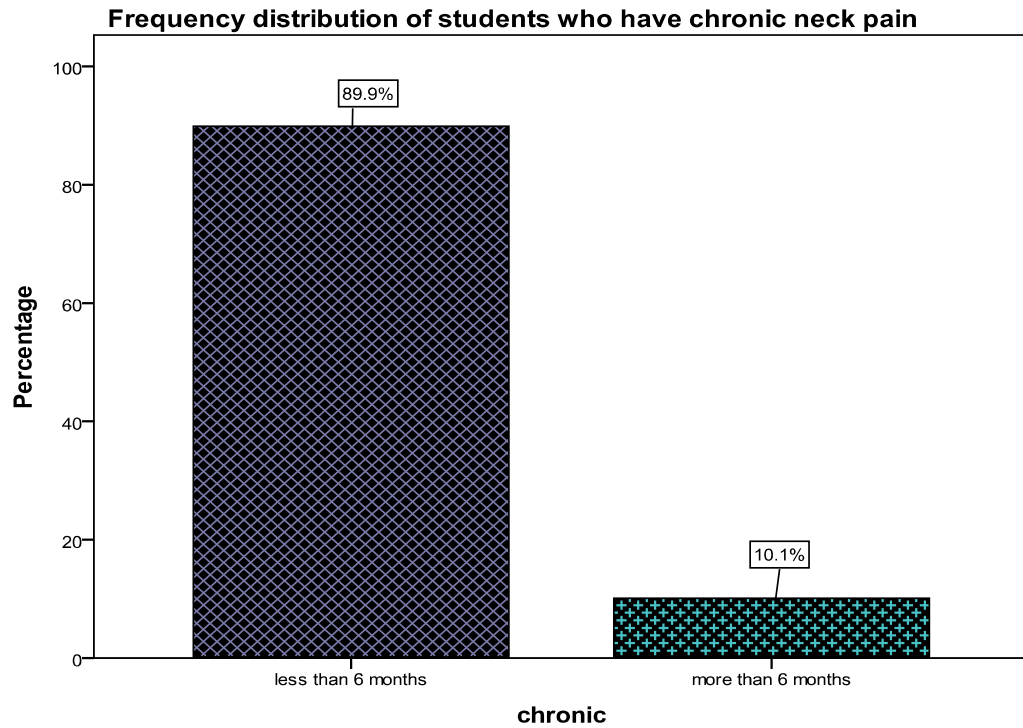
Gender difference among prevalence of students who have chronic neck pain

			Gender		Total
			Female	Male	
chronic	less than 6 months		89	44	133
		% of Total	60.1%	29.7%	89.9%
	more than 6 months		10	5	15
		% of Total	6.8%	3.4%	10.1%
Total			99	49	148
		% of Total	66.9%	33.1%	100.0%

Table 4.10

5.0 DICUSSION

Neck pain has become an up growing issue among the university students (Bruls, et al., 2013; Khan and Chew, 2013; Bialocerkowski, Grimmer, and Nyland, 2005). A recently conducted research on musculoskeletal pain among college students in Malaysia stated that complaint of neck pain was ranked in the second after low back pain (Alshagga et al., 2013). The current frequency among the medical and health science undergraduate students was 38.5% female students had double the percentage (25.7% vs. 12.8%) compared to male students.

The female were found to have a higher prevalence compared to male with the percentage of 29.5% and 14.6% after admission into UTAR. Many researches had found similar results of having a higher prevalence in female when compared to males. (Alshagga, et al, 2013; Bialocerkowski, et al., 2001; Croft, et al., 2001). Ekman, (2009) found out that there were high demands in either work or study, as well as stress perceived in female are more than male which reason out why most of the study are having a higher prevalence in female than male.

An increase in prevalence after admission when compared to before admission was seen among the medical and health sciences students (31% to 41%). This finding is similar to the report in Nigerian (Ayanniyi, et al., 2010) in a cross-sectional survey among the university undergraduates (28.7% to 68.6%). Besides that, there were another research done in Malaysia on prevalence and

factors associated with musculoskeletal pain including neck shoulder and low back, which had a similar finding on the increase in frequency in one year from 24.1% to 41.8% (Alshaaga, et al, 2013).

Through the results obtained, we found out that majority of the students who have had neck pain did not seek for medical care and this was similar to a previous study done by Ayanniyi et al. (2010) This result was compared among both the genders and it was reported that a higher number of females sought for medical treatment for their neck pain when compared to males.

There were 10.1% of respondents who have chronic neck pain through this study which was conducted. The gender pattern of distribution shows that there were higher number female respondent who complained of chronic neck pain when compared to males. Cote et al. (2004) reported in their study conducted in Canada using the Chronic Pain Questionnaire found females had an increase in the number of chronic neck pain than their male counterparts.

Based on the pattern of neck pain with respect to the location of neck pain, the commonest area affected was side of neck followed by back of the neck and both shoulders was the third most affected area. However, pain radiating to the arm was the least affected area due to neck pain.

31

The highest percentage (25.7 %) of duration of school work per week lies in year two students that is 40 to less than 50 hours. However, this is inconsistent with the report of Ayanniyi et al. (2010) had the result of which most of the students who had the similar duration of school week each week were in higher levels. The reason behind this might be the second year student were starting their practical years and coincidently having classes at the same time which doubled up their workload. Furthermore, most of the respondents with reported neck pain are the MBBS students. Medical science course is well known for their tough and demanding syllabus which may have predisposed the students to neck pain (Siivola, 2003).

Apart from that, prolonged reading hours may lead to neck pain by means of inappropriate posture while reading (Rowe, 2008). Most of the neck pain respondents in this study reported to have duration of one to less than two hours of reading in each session, which mostly are year one students. However, these findings are not in agreement with findings of other literatures (Kanchanomai, et al. 2011; Ayanniyi, et al. 2010).

Prolonged reading, using the computer, prolonged sitting are the major perceived causes of neck pain among all the respondents. These factors is compatible with few studies that shows the study related activities such as prolonged sitting during studying, positions assumed during lectures are related to high prevalence of neck pain. (Bialocerkowski et al., 2005; Hakala et al,. 2006:

Kanchanomai et al., 2011). Computer use is very common among undergraduate students (Noack-Cooper KL.et al, 2009) and some epidemiological studies have been published with regard to its relation to onset of neck pain(Jensen C, 2003; Eltayeb S.et al, 2009; Tornqvist EW.et al, 2009).

Types of pillow used when sleeping also contributed to neck pain but further investigation about this causes are not done in this study. Neck pain due to stress is surprisingly low in this study. It is not in agreement with Diepenmaat et al. (2006) which state that depressive symptoms and stress are likely to cause neck pain among adolescents.

The neck pain limits many functional activities of the student such as studying, using the computer to complete assignments. This may lead to the students withdrawing from studies for a certain period of time thus; their academic performance may also deteriorate and hence the quality of life may also get affected. According to the results of study, concentrating on schoolwork and reading is highly limited due to neck pain. This is consistent with the findings of Ayanniyi et al. (2010). Social recreational activities are the least limited activities due to neck pain.

6.0 LIMITATIONS

In every research, there will definitively be limitations. This research is a cross-sectional study design from which causal inferences between variables cannot be drawn from the results (Elwood, 1998).

Furthermore, our study was not able to collect the whole population as estimated due to inefficiency in the online questionnaire. The results of our study showed a relatively low response rate for the online version compared to the paper version of questionnaire. Leeceet al. (2004) conducted a survey through internet and mail questionnaire, resulted in internet surveys having a lower response rate compared to a mail questionnaire (P < 0.01). One of the reasons for which there were low response rate might be due to lack of interest in the topic. An interesting topic will hit a high respond rate, with a supporting review study stated that a survey from National Geographic Society's Web site had double response rate of the estimated number with the reason of respondents being more interested because of their interest in the topic (Couper, 2000).

Additionally, our questionnaire is being self-reported so there will be a possibility of recall bias. Furthermore, the population in this study is limited to medical and health science undergraduates by which the result of this study is not suitable to be applied in terms of general population.

Besides that, the questionnaire can be improved in some areas by including specific questions about the risk factors in detail such as, the postures of the participants when they are studying or reading etc.

7.0 RECOMMENDATIONS

Further study can be conducted in different types of population with a larger sample. It is also suggested that further study may include outcome measure such as neck disability index to grade the percentage of disability in the respondents.

8.0 CONCLUSION

This study concludes that undergraduate students from the medical and health sciences have a high prevalence of neck pain. The major causes of neck pain are prolonged reading, using the computers and prolonged sitting. Concentrating on schoolwork is the most limited activity followed by reading due to neck pain among undergraduate students. The prevalence of neck pain among gender shows female undergraduate students have a higher prevalence compared to male students. An education program should be introduced for undergraduate students regarding the importance of good posture, proper biomechanics to be utilized during reading and computer work sessions, to avoid neck pain.

REFERENCES:

1. Alshagga, M.A. et al., 2013. Prevalence and factors associated with neck, shoulder and low back pains among medical students in a Malaysian Medical College. *BMC Research Notes*, 6 (244), pp. 1-7.

2. Andersen, L.L., Hansen, K., Mortensen, O.S. and Zebis, M.K., 2011. Prevalence and anatomical location of muscle tenderness in adults with nonspecific neck/shoulder pain. *BMC Musculoskeletal Disorders*, 12 (169), pp. 1-8.

3. Ayanniyi, O., Mbada, C.E. and Iroko, O.P., 2010. Neck pain occurrence and characteristics in Nigerian university undergraduates. *TAF Preventive Medicine Bulletin*, 9(3), pp. 167-174.

4. Bialocerkowski, A.E., Grimmer, K.A. and Nyland, L.J., 2005. Prevalence of and risk factors associated with neck problems in undergraduate physiotherapy students. *Physiotherapy Canada*, 57 (4), pp. 293-304.

5. Borenstein, D., 2013, *Approach to the patient with neck pain* [Online]. Available   at:

http://www.accessmedicine.com.libezp.utar.edu.my/content.aspx?aID=57 271013. [Assessed: 23 October 2013].

6. Bruls, V.EJ., Bastiaenen, C.HG. and Bie, R.A., 2013. Non-traumatic arm, neck and shoulder complaints: prevalence, course and prognosis in a Dutch university population. *BMC Musculoskeletal Disorders*, 14 (8), pp. 1-8.

7. Childs J.D. et al., 2008. Neck pain: clinical practice guidelines linked to the international classification of functioning, disability, and health from the orthopedic section of the American physical therapy association. *Journal of Orthopaedic& Sports Physical Therapy*, 38 (9), pp. 6-11.

8. Cote, P., Cassidy, J.D., Carroll, L. J., Kristman, V., 2004. The annual incidence and course of neck pain in the general population: a population-based cohort study. *Pain*, 112, pp. 267-273.

9. Couper, M. P., 2000. Web Surveys: A review of issues and approaches. *Public Opinion Quarterly*, 64, pp. 464-494.

10. Croft, P.R. et al., 2000. Risk factors for neck pain: a longitudinal study in the general population. *Pain*,93, pp. 317-325.

11. Diepenmaat, A.C.M., Wal, V., Vet, H.C.W. and Hirasing, R.A., 2006. Neck/shoulder, low back and arm pain in relation to computer use, physical activity, stress and depression among Dutch adolescents. *American Academy of Pediatrics*, 117, pp. 412-416.

12. Eltayeb, S., Staal, J.B., Hassan, A., and Bie, R.A., 2009. Work related risk factors for neck, shoulder and arms complaints: a cohort study among Dutch computer office workers. *Journal of Occupation Rehabilitation*, 19(4), pp. 315-322.

13. Elwood, M., 1998. Critical appraisal of epidemiological studies and clinical trials. 2nd ed. Oxford, UK: *Oxford University Press*.

14. Ekman, G.A., Anderson, E.M. and Hagberg M., 2009. Analyzing musculoskeletal neck pain, measured as present pain and periods of pain, with three different regression models: a cohort study. *BMC Musculoskeletal Disorders*, 10 (73), pp. 1-11.

15. Goodson, J.D., 2012, *Neck Pain* [Online]. Available at: http://www.accessmedicine.com.libezp.utar.edu.my/content.aspx?aID=56 856064 [Accessed: 31 October 2013].

16. Guzman, J. et al., 2008. Clinical practice implications of the bone and joint decade 2000-2010 task force on neck pain and its associated disorders. *Journal of Manipulative and Physiologcal Therapeutics*, 32 (2), pp. 17-28.

17. Hakala, P.T., Rimpela A.H., Saarni, L.A. and Salminer, J.J., 2006. Frequent computer-related activities increase the risk of neck-shoulder and low back pain in adolescents. *European Journal of Public Health,* 16 (5), pp. 536-541.

18. Ho, G.W. and Howard, T.M., 2011. *Neck pain* [Online]. Available at: http://www.accessmedicine.com.libezp.utar.edu.my/content.aspx?aID=57 271013. [Assessed on 23 October 2013].

19. Isaac, Z. and Anderson, BC., 2013, *Evaluation of the patient with neck pain and cervical spine disorders* [Online]. Available at: http://uptodateonline.com/application/topic/print [Accessed: 2 November 2013].

20. Jensen, C., 2003. Development of neck and hand-wrist symptoms in relation to duration of computer use at work. *Scand J Work Environ Health*, 29(3), pp. 197-205.

21. Kanchanomai, S., Janwantanakul, P., Pensri, P. and Jiamjarasrangsi, W., 2011. Risk factors for the onset and persistence of neck pain in undergraduate students: 1-year prospective cohort study. *BMC Public Health*, 11 (566), pp. 1-8.

22. Khan, S.A. and Chew, K.Y., 2013. Effect of working characteristics and taught ergonomics on the prevalence of musculoskeletal disorders amongst dental students. *BMC Musculoskeletal Disorders*, 14 (118), pp. 1-8.

23. Leece, P. et al., 2004. Internet Versus Mailed Questionnaires: A Controlled Comparison. *Journal of Medical Internet Research*, 6 (4) [Online]. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1550620/ [Accessed: 5 December 2013]

24. Lorusso, A., Vimercati, L.and L'Abbate, N., 2010. Musculoskeletal complaints among Italian X-ray technology students: a cross-sectional questionnaire survey. *BMC Research Note*, 3(114), pp. 1-4.

25. Mäkelä, M. et al. 1991. Prevalence, determinants, and consequences of chronic neck pain in Finland. *American journal of epidemiology,* 134, pp. 1356-1367.

26. Morse, T. et al., 2007. Musculoskeletal disorders of the neck and shoulder in dental hygienists and dental hygiene students. *The Journal of Dental Hygiene*, 81 (1), pp. 1-16.

27. Mosby., 2009. Mosby's Medical Dictionary, 8th ed. St. louis: Elsevier.

28. Movahhed, T. et al., 2013. Musculoskeletal pain reports among Mashhad Dental Students, Iran. *Parkistan Journal of Biological Sciences,* 16 (2), pp.80-85.

29. Noack-Cooper, K. L., Sommerich, C.M. and Mirka, G.A., 2009. College students and computers: assessment of usage patterns and musculoskeletal discomfort. *Work*, 32 (3), pp. 285-298.

30. Period Prevalence: At other times,*Morbidity Frequency Measures*. [Online]. Available at: http://health.mo.gov/training/epi/PrevalenceRates-c.html [Accessed: 6th December 2013].

31. Picavet, H.S.J., Van Gils, H.W.V. and Schouten, J.S.A.G., 2000. Musculoskeletal complaints in the Dutch populations. *The Netherlands:RIVM (National Institute of Public Health and the Environment).*

32. Rose,KA., 2000. The effect of neck pain and headaches on academic performance of college students. *Journal of neuromusculoskeletal system,* 8(4), pp.118-122.

33. Rowe, P., 2008. *The effect of a 3 minute static posture on cervical position sense in asymptomatic participants*. Master of Osteopathy, UNITEC Institute of Technology.

34. Siivola, S., 2003. Neck and shoulder pain in a young population. *Prevalence and etiological factors*. 30th August 2003, University of Oulu, pp. 40-64.

35. Skillgate, E., Magnusson, C., Lundberg, M. and Hallqvist J., 2012. The age- and sex specific occurrence of bothersome neck pain in the general

population – results from the Stockholm public health cohort. *BMC Musculoskeletal Disorders*, 13 (185), pp. 1-9.

36. Smith, D.R. and Leggat P.A., 2010. Prevalence and distribution of musculoskeletal pain among Australian medical students. *Journal of Musculoskeletal Pain*, 15(4), pp. 39-46.

37. Tornqvist, E.W., Hagberg, M., Hagman, M., Risberg, E.H. and Toomingas, A., 2009. The influence of working conditions and individual factors on the incidence of neck and upper limb symptoms among professional computer users. *Int Arch Occup Environ Health*, 82(6), pp. 689- 702.

38. World Health Organization 2013, *Risk factors* [Online]. Available at: http://www.who.int/topics/risk_factors/en/ [Accessed: 31 October 2013].

INFORMATION SHEET

Project Title: **"The Prevalence and Risk Factors of neck pain among medical and health sciences undergraduate students in UTAR:A cross-sectional study"**

Dear participants,

This questionnaire is an attempt to gather information about the occurrence of neck pain among undergraduate students. The main objectives are:

> (i) To investigate prevalence and risk factors associated with neck pain among medicine and health sciences undergraduate students in UTAR.
> (ii) To compare the prevalence between male and female medicine and health sciences undergraduate students in UTAR.

Your participation in this survey is much appreciated as it would help the researchers in getting a further understanding in the extent of undergraduate students affected by neck pain in UTAR Faculty of Medicine and Health Sciences. A **truthful** and **honest** response is needed from you to answer these questions.

The time needed to complete the questionnaire is **approximately 10 minutes**. Please note that the completion of this questionnaire is entirely **voluntary**. All information gathered as a result of your participating in this study will be treated with ultimate confidentiality.

Please read through the consent form and sign it to express your agreement to participate in this project. Thank you for taking time to read this information sheet.
_____

CONSENT FORM

Please tick (√) the appropriate boxes:

I have read and understood the project information sheet dated_____.
(dd/mm/yy)
I have been given the opportunity to ask questions about the survey.
I agree to participate in the survey include completing all the questionnaires.
I understand my personal details will not be revealed to people outside the research project.
I understand that other researchers will have access to this data only if they agree to preserve the confidentiality of data.

_____   _____
Name of Participant   Signature

Section A:

Demographic Characteristics

Age in years (last birthday):_____years

Gender: Male ☐   Female ☐

Course:

Bachelor of Medicine and Bachelor of Surgery (MBBS ☐	Bachelor of Chinese Medicine (Hons) ☐
Bachelor of Nursing (Hons) ☐	Bachelor of Physiotherapy (Hons) ☐

Years of study: _____Semester:__

Email address: _____

Section B:

Prevalence of Neck Pain

Please tick appropriately in the boxes provided in the questions below.

1. Did you have neck pain before gaining admission into the UTAR?
   Yes ☐   No ☐

2. Have you had neck pain since you gained admission into the UTAR?
   ☐ Yes   ☐ No

3. (a) Are you presently having neck pain?
   ☐ Yes   ☐ No

   (b) If yes, for how long has this ongoing episode lasted?
   ☐ (a) Less than one month
   ☐ (b) One to less than three months
   ☐ (c) Three to less than 6 months
   ☐ (d) More than 6 months

4. Have you ever sought medical care for your neck pain?
   ☐ Yes   ☐ No

5. a) Have you ever had any injury to your neck resulting in neck pain?

☐ Yes   ☐ No

b) If yes, what caused the injury?
(a) Road traffic accident   ☐
(b) Direct force/ blow to the neck   ☐
(c) Others: _____

6. How long ago was the injury?
   a) Less than 1 month   ☐
   b) 1 to 3 months   ☐
   c) 3 to less than 6 months ☐
   d) More than 6 months   ☐

7. Is yes, does the neck pain persist?

Yes ☐   No ☐

Section C

Intensity and Area of Pain

1. Please indicate by circle the number in the box that best describes the severity of your neck pain. Zero (0) being no pain and (10) being worst pain imaginable.

| 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |

2. Use the figure below to show the distribution of your neck pain by ticking as appropriate.

(You may tick as many choices as needed)

AREA

Head   ( )

Side of the neck   ( )
Back of the neck   ( )
One Shoulder   ( )

Both Shoulders   ( )

Arm   ( )

Section D

Risk Factors associated with Neck Pain

Please circle appropriately in the following options provided.

1. What type of seats do you use during lectures?
   (a) Seats with back support
   (b) Seats without back support

2. How many hours of school work (lectures, practicals, clinic work) do you have per week?
   (a) 1 to less than 10 hours
   (b) 10 to less than 20 hours
   (c) 20 to less than 30 hours
   (d) 30 to less than 40 hours
   (e) 40 to less than 50 hours
   (f) 50 hours and above

3. How long do you study at a stretch?
   (a) Less than 1 hours
   (b) 1 hour to less than 2 hours
   (c) 2 hours to less than 3 hours
   (d) 3 hours to less than 4 hours
   (e) 4 hours and above

4. What do you think is the cause of your neck pain?
   (You may tick as many choices as needed)
   ☐ (a) Prolonged reading
   ☐ (b) Using the computer
   ☐ (c) Previous neck injury
   ☐ (d) Posture assumed during lectures
   ☐ (e) Prolonged sitting
   ☐ (f) Prolonged standing
   ☐ (g) Type of pillow used when sleeping
   ☐ (h) Others: _____

5. Does the neck pain limit/ disturb you from
   (a) Sleeping?
   (b) Reading?
   (c) Concentrating on your school work?
   (d) Social recreational activities?
   (e) Housework?