

## Original Research Article

# Prevalence of Work- Related Repetitive Stress Injuries amongst the Health Care Workers in Large Tertiary Care Hospital

### ABSTRACT

**Aims:**To investigate the prevalence of work-related repetitive stress injuries amongst the health care professionals in large tertiary care hospital

**Materials & Methods:**We included 42 adult health care professionals (22 males and 20 females; using suitably structured questionnaire was used. A cross-sectional survey was conducted, using a validated research instrument questionnaire consisting of 52 questions divided into multiple parts. Descriptive statistics were used to explain the demographic characteristics and information regarding the prevalence of work-related musculoskeletal work disorders of the respondents. This study was conducted at teaching hospital of Maharishi Markandeshwar University, Mullana, Haryana, India in different department between August 2018 and June 2019.

**Results:**A total of the 42 respondents were returned and properly filled questionnaires. Out of total respondents 5(11.9%) of the health care workers did not have any work-related musculoskeletal disorders (WMSD). It is reported that overall 52.3% of the 42 respondents were male and 47.7% were female. It is also clarified that overall four respondent were Radiologist, six were medical physician; four physiotherapists; seven dentists; nine radiographers; four laboratory technologists; eight nurses respectively. Amongst the health professional workers dentist were being one the most prevalence of occurring work related musculoskeletal disorder followed by radiographer, physiotherapist, lab technologist, medical physician and nurses. Similarly, neck pain being the most common affected body part where 5 dentists was recorded out of 17 health professionals. However, neck pain account to 40.4% amongst the health care workers followed by shoulder pain 23.8%, hand pain 11.9%, lower back pain 7.2% and wrist pain 4.8%.

**Conclusion:**Based on our study, the finding demonstrated the top three most prevalence occurring musculoskeletal disorder amongst health professional are dentist, radiographer and physiotherapist. Larger sample size would be required in order show an empirical evidence.

*Keywords: Work related musculoskeletal disorders, health professionals, Ergonomics, body mechanic*

### 1. INTRODUCTION

Ergonomics is the study of the human body in relation to the working environment. Improper way of body mechanics can cause an injury especially musculoskeletal disorder. Work-related musculoskeletal disorders (WRMSDs) are key responsible for developing many symptom and diseases in many work place. According to the U.S. Bureau of Labor Statistics reported that workplace injury rates for hospital workers are like those for the industrial worker.[1-2] Many health care professionals are vulnerable to cause WRMDs which leads to impact in increasing the cost of health, financial burden and decreased productivity and lower quality of life. [3] After the computer became a commercially used tool in the medical field there was an increase in musculoskeletal injuries amongst the health care workers. Workplace safety measure for health care professionals must include few of the important effort like preventing from falls and handling patient safety and to increase the awareness and used of computer and other technology to reduce the effect of WRMDs. Moreover, few of the most common risk factor relating to WRDMs may include repetitive motions, forceful movements,

long duration of pressure, excessive of certain anatomical structures, improper posture or positioning, excessive force, and strain, and vibrations. [4] It is also stated that in some of the developed countries, like USA and Australia, have initiated a preventive measure in order to minimize or control WRMSDs for the health care professional targeting especially on sonographer. Some of the relevant parameters contributing to WRMSDs are scanning hours per day, a number of patients per day, and years of experience which are also closely associated with the occurrence of WRMSDs. Health professional worker who work in a same position for excessive or overload of his or her duty, working in wrong body mechanic and handling an excessive number of patients in a specific period time was reported to be the most common caused and job risk factor that significantly contributing to the WRMSDs. [5-6] Moreover, it is also reported that WRMSDs tends to impact negatively towards the absence from work, increase work restriction, transfer to another job.[7] A high number of health care professional were reported with WMSDs with low pain being the most commonly affected area. A similar study has also reported that WRMSDs tends to impact in disability than any other group of diseases. [9-10] Thus, there seems to be a strong association between the occupational gender and level of sickness absence because of WRMSDs. [11]. Health care professionals are vulnerable to risk for WRMSDs.[12-14] Many of the Studies relating to WRMSDs among health care professionals are mainly emphasized on physicians, dentists, physical therapists, lab technicians, and nurses. A total of 18,942 participants were participated in the population of the Taiwan. Moreover, gender had a significant association with musculoskeletal disorder in the same study conducted in nationwide study in Taiwan population. In general, effect MSD were amongst the female were more prevalence compare to our study male being the highest prevalence of MSD. In another study of musculoskeletal diseases conducted in the United State of America, Females, in general, report a higher rate of prevalence than males for most major musculoskeletal disorder. Among females, 53 women in every 100 females in the population report musculoskeletal conditions; among males the rate is 45 per 100. Joint pain like knee pain, Shoulder pain were reported by 18.9 million persons, is the first and second most common of musculoskeletal disorders. A cross section study conducted among dentists in Thessaloniki, Greece with a respondent rate of 88%. Questions include data on the prevalence of occurrence in relation to musculoskeletal disorders that last for 12 months. The prevalence of musculoskeletal was relatively very high amongst the dentist. The report revealed that there were a very close relationship in relation to the occurrence of musculoskeletal disorders like shoulder pain, wrist pain and neck pain.[15-17] In another study of the prevalence of musculoskeletal disorder conducted amongst the health professional workers who work in the nursing home at Greece and Netherland. The comparison survey revealed that Greek nurse are prone to occurrence back pain than the Dutch nurse. Similar studies in Ibadan, South-west Nigeria was conducted amongst 180 nurses. A cross sectional study from a population-based study of a sex-age stratified sample of Dutch was conducted in general group of population with postal questionnaires was assessed on musculoskeletal disorders. The top three of self-reported musculoskeletal pain prevalence was low back pain shoulder pain, neck pain. Furthermore to be mentioned few of the most common major complaints amongst the healthcare professionals are back, neck, shoulder, and knee problems. [18-20] In Europe musculoskeletal disorders are most common with 25 % of the worker are reported to have backache and 22% as muscular pain. Moreover MSDs significantly affect loss of income as well as cost of business and national economies. Nevertheless any worker can also be affected by MSDs so MSDs must be prevented by taking appropriate measure like assessing work tasks, stay effective in workplace, reduce the work load. This campaign or measurement is being initiated in the first European week, 2000 as main theme as 'Turn your back on MSDs' which is expected to involve all EU member stated. But amongst the listed healthcare professionals, physician being the least occurrence to WRMSDs.[21] There are number of activities that are associated for causing musculoskeletal disorders like walking, sitting, running, playing, dancing and working etc. Musculoskeletal injuries specifically target bones, joint, muscle, tendon, ligaments and nerves. One important point be mentioned is that working posture and movement are the main important dependent in causing work-related musculoskeletal disorders. A person who are physically active is quite beneficial to the musculoskeletal system but an overload may triggered or pose a threat in causing MSDs. MSDs are basically caused when muscle, joint, ligament are not properly aligned with external forces or body mechanics. External force may cause fracture, trauma and contusions. Moreover, work related MSDs are the most cumulative disorders affecting health professionals. The main causes being the repeated work for long period time or repeat action etc. Work related musculoskeletal disorder are either specific nonspecific. Some MSDs like lumbosacral radicular syndromes, carpal tunnel syndrome in wrist and patellar tendonitis on the lower extremities are specific and do have a clinical features and some of them has nonspecific without having a distinct clinical features. Most of the work related MSDs are cumulative resulting from multiple factor. Upper limb, the neck and lower back are the top prevalence of occurring MSDs in body part. Many of the MSDs are transient and reversible often disappear after rest from work. Male worker are more likely to suffer MSDs than female workers. The prevention measure or intervention relating to work-related musculoskeletal disorder require a public health evidence base, detail on designing intervention on WRMSDs and resources such as Carpal tunnel syndrome (CTS). Carpal tunnel syndrome is the compression of the median nerve at the wrist resulting in numbness, tingling weakness or muscle atrophy in the hand. Back complaint are amongst the top ten reason for visiting the hospital for treatment and diagnosis.

## 2. MATERIAL AND METHODS

The study was conducted in various clinical department of Maharishi Markandeshwar University and Hospital, Mullana, Haryana, India. The health care Industry involved doctors, nurses to lab technician, technologists, radiologists, dentists, nurses and physiotherapists of various clinical departments in MMU teaching hospital, Mullana from December to May 2019. It is a prospective cross-sectional study design. The present study was performed on 42 employees working in the teaching hospital of Maharishi Markandeshwar University from different health professional workers within period of 6 months from November 2018 – April 2019 having age between 18 – 65 years. Data were anonymized after the examination and analyzed for the purpose of a controlled cross sectional design. Different combinations of validated and standardized questionnaires will be used for collecting different types of data. Questionnaire was designed to gather the information about the different types WMSDs, different categories of health professionals and socio demographic data sheet. The collected data will be entered in Microsoft Excel and will be transferred to SPSS version 22 for statistical analysis. Descriptive statistics was used to explain the characteristics of the subjects. Frequencies and percentage based on questionnaire answer from the respondents above 18 years of age including nurse, lab technician, technologists, physiotherapists, doctors, dentists, radiologists and receptionists, will be encoded in order to represent the information regarding in WMSDs. Different combinations of validated and standardized questionnaires was used for collecting different types of data. Questionnaires was designed to gather the information about the different types WMSDs, different categories of health professionals and socio demographic data sheet. The collected data was entered in Microsoft Excel and will be transferred to SPSS version 22 for statistical analysis. Descriptive statistics used to explain the characteristics of the subjects. Frequencies and percentage based on questionnaire answer from the respondents including nurse, lab technician, technologists, physiotherapists, doctors, dentists, radiologists and receptionists, will be encoded in order to represent the information regarding in WMSDs.

### 3. RESULTS

According to my study, the distributed questionnaire amongst the 42 respondents were returned and properly filled. Most of the health professionals used repetitive movement during their work. In this descriptive cross-sectional study, the body parts were analyzed relating to pain and discomfort that lasted 2 days or more in the last year which was caused by work related job. Amongst the health professional workers dentist were being one the most prevalence of occurring work related musculoskeletal disorder followed radiographer, physiotherapist, lab technologist, medical physician and nurses. Amongst the body part mostly affected is the neck pain where dentist is recorded to be mostly affected with 5 dentists. Similarly, in the shoulder and foot pain radiographer were mostly affected. For wrist pain and hand dentist are more prevalence of having those affects. Interesting as per the record in the study it is also revealed that physiotherapist being the most prevalence of having lower back pain. The descriptive cross section study for different body parts with their related answer given by the respondents are shown below in the In this descriptive cross-sectional study, we analyses the body parts where pain and discomfort that lasted 2 days or more in the last year which was caused by work related job. Amongst the health professional workers dentist were being one the most prevalence of occurring work related musculoskeletal disorder followed by radiographer, physiotherapist, lab technologist, Medical physician and nurses. Amongst the body part mostly affected is the neck pain where dentist is recorded to be mostly affected with 5 dentists out 17 health professionals. Similarly radiographer were mostly affected with shoulder pain. For wrist and hand pain dentist are more prevalence of having those affects. Interesting as per the record in the study it is also revealed that physiotherapist being the most prevalence of having lower back pain. However, neck pain account to 40.4% amongst the health care workers followed by shoulder pain 23.8%, hand pain 11.9%, lower back pain 7.2% and wrist pain 4.8%. As stated in the figure 1 it is reported that overall 52.3% of the 42 respondents were male and 47.7% were female. It is also clarified that overall four respondents were Radiologist, six were doctors; five physiotherapists; seven dentists; nine radiographers; four laboratory technologists; eight nurses respectively. Furthermore in the Table 1, it is also identified amongst the Radiologist that 3 were male, 1 was female; amongst the Doctor 5 were male, 1 was female; amongst the physiotherapist 1 was male, 1 was female; amongst the dentist 3 were male, 4 were female; amongst the radiographer 8 were male, 1 was female; amongst the laboratory technologist 2 were male, 2 were female; amongst the nurse none of them were male, 8 were female.

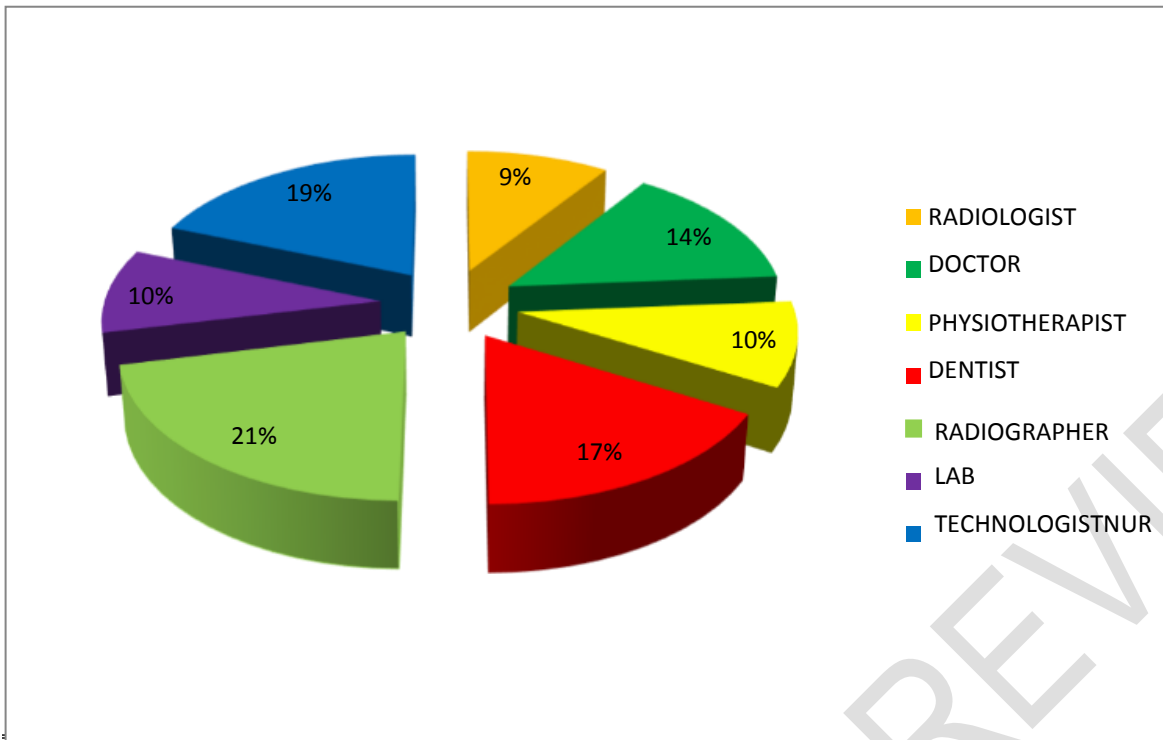


Figure 1: Job Title amongst the Health Professionals

Table 1: Genderwise amongst the health professionals

	Male	Female	Total
<b>Radiologist</b>	3	1	4
<b>General Physician</b>	5	1	6
<b>Physiotherapist</b>	1	3	4
<b>Dentist</b>	3	4	7
<b>Radiographer</b>	8	1	9
<b>Labtechnologist</b>	2	2	4
<b>Nurse</b>	0	8	8
<b>Total</b>	22	20	42

In the table 2, participants were asked about the work position during job, majority of the workers were frequently used with sitting position which is estimated to be 24 health professional's worker and 18 health professionals were in standing position.

Table 2: Main Body Work Position during Job

Work Position	Frequency
<b>Sitting</b>	<b>24</b>
<b>Standing</b>	<b>18</b>
<b>Total</b>	<b>42</b>

In the table 3, the data was categorized according to occupation and gender wise having neck pain amongst the health care professional. It is found that 17 of the workers had a neck pain and 25 workers did not have neck pain. Amongst the

health care professional male being the most prevalence of neck pain followed by male with 11 respondents. Moreover, dentist rank the top spot in the neck pain followed by radiologist, medical physician, physiotherapist, lab technologist and nurse. It is indicated that 17 respondent answer the question about while working is the pain or discomfort; 4 respondent as 'Less'; 7 respondents as 'Same' and 6 respondents as 'Worse'. Similarly, about the question after your shift is the pain or discomfort; 12 respondent answer as 'Less'; 4 as 'Same'; and 1 as 'Worse'. It is indicated that 17 respondent answer the question about after a week away from work, is the pain or discomfort; 7 of the respondents answer as 'less' ; while 7 as 'same' and 1 as 'worse'. Similarly about the question has the pain or discomfort caused you to take off work in the past; 9 respondents answer As 'No' and 8 as 'Yes'. Further, if 'Yes' is the answer how many days off in all; 6 respondents took 1 to 3 days work off followed by 1 worker took 7 to 9 days off

However it is shown that 17 respondent answer the question about how much does it interfere with your work; 11 of the respondents answer as 'No interference'; while 5 respondents answer as 'Some interference' and 1 respondent answer as 'Had to take time off due to pain'. Further asked about the question if yes how many days off in the past; only respondent answer 1 to 3 days. Moreover, asked about the question how much does it interfere with your life outside of work; 7 respondents answer as 'No interference'; 8 respondents answer 'Some interference'; and 2 respondent 'Had to stop enjoying activity due to pain'. If you have to stop enjoying activity, how many days in the past off in the past work; 2 respondents answer '1 to 3 days'. In the last part of question of the neck pain, asked about the question how much does it interfere with your work; 8 respondents answer 'No interference'; and 9 respondents answer 'Some interference'

**Table 3: Variables related to Neck pain**

Variable Related to Neck Pain	Category	No.	%
Gender wise having neck pain due to job	Male	11	64.8
	Female	6	35.2
While working is the pain or discomfort	Less	4	23.5
	Same	7	41.2
	Worse	6	35.3
After your shift, is the pain or discomfort?	Less	12	70.6
	Same	4	23.5
	Worse	1	5.9
After a week away from work, is the pain or Discomfort	Less	7	41.2
	Same	7	41.2
	Worse	3	17.6
Has the pain or discomfort caused you to take time off work in the past year?	Yes	8	52.9
	No	9	47.1
If yes, how many days off in all?	1 to 3 days	6	85.7
	4 to 7 days	1	14.7
To what degree has your pain or discomfort interfered with your work, your life outside of work, and your sleep in the past year?			
a) How much does it interfere with your work?	No Interference	11	64.7
	Some interference	5	29.4
	Has to take time off In the past year?	1	5.9
If you had to take time off work, how many days off in the past year?	1-3 days	1	100
b) How much does it interfere with your life outside of work	No interference	7	41.1
	Some interference	8	47.1
	Had to stop enjoying Activity due to pain	2	11.8
If you had to stop enjoying, how many days in the past year did you stop it?	1 to 3 days	2	100

c) How much does it interfere with your sleep?	No interference	8	47.1
	Some interference	9	52.9
	It affects me every night	0	0
Do you experience any other health problems related to your work?	Yes	0	0
	No	17	100

In table 4, the data was categorized according to occupation and gender wise having shoulder pain amongst the health care professional. It is found that out of 10 of the workers 4 male had a shoulder pain followed by 4 female. It is indicated that 10 respondent answer the question about while working is the pain or discomfort; 1 respondent as 'Less'; 5 respondents as 'Same' and 4 respondents as 'Worse'. Similarly, about the question after your shift is the pain or discomfort; 6 respondent answer as 'Less'; 3 as 'Same'; and 1 as 'Worse'. It is indicated that 10 respondent answer the question about after a week away from work, is the pain or discomfort; 4 of the respondents answer as 'less'; while 4 as 'same' and 2 as 'worse'. Similarly about the question has the pain or discomfort caused you to take off work in the past; 4 respondents answer As 'No' and 6 as 'Yes'. Further, if 'Yes' is the answer how many days off in all; 7 respondents took 1 to 3 days work off; followed by 3 worker took 4 to 7 days off. It is indicated that 10 respondent answer the question about how much does it interfere with your work; 7 of the respondents answer as 'No interference'; while 2 respondents answer as 'Some interference' and 1 respondent answer as 'Had to take time off due to pain'. Further asked about the question if yes how many days off in the past; only respondent answer 1 to 3 days. Moreover, asked about the question how much does it interfere with your life outside of work; 5 respondents answer as 'No interference'; 4 respondents answer 'Some interference'; and 1 respondent 'Had to stop enjoying activity due to pain'. If you have to stop enjoying activity, how many days in the past off in the past work; none of the respondents answer. In the last question of the neck pain, asked about the question how much does it interfere with your work; 4 respondents answer 'No interference'; and 6 respondents answer 'Some interference'.

**Table 4: Variables related to Shoulder Pain**

Variable Related to Shoulder Pain	Category	No.	%	
Gender wise having shoulder pain due to job	Male	6	60	
	Female	4	40	
While working is the pain or discomfort	Less	1	10	
	Same	5	50	
	Worse	4	40	
After your shift, is the pain or discomfort?	Less	6	60	
	Same	3	30	
	Worse	1	10	
After a week away from work, is the pain or Discomfort	Less	4	40	
	Same	4	40	
	Worse	2	20	
Has the pain or discomfort caused you to take time off work in the past year?	Yes	6	60	
	No	4	40	
If yes, how many days off in all?	1 to 3 days	7	70	
	4 to 7 days	3	30	
To what degree has your pain or discomfort interfered with your work, your life outside of work, and your sleep in the past year?	a) How much does it interfere with your work?	No Interference	7	70
		Some interference	2	20
		Has to take time off	1	10

	In the past year?		
If you had to take time off work, how many days off in the past year?	1-3 days	1	100
b) How much does it interfere with your life outside of work	No interference	5	50
	Some interference	4	40
	Had to stop enjoying Activity due to pain	1	10
If you had to stop enjoying, how many days in the past year did you stop it?	1 to 3 days	1	100
c) How much does it interfere with your sleep?	No interference	4	40
	Some interference	6	60
	It affects me every night	0	0
Do you experience any other health problems related to your work?	Yes	0	0
	No	10	100

In table 5, the data was categorized according to occupation and gender wise having Wrist pain amongst the health care professional. It is found that 2 male of the workers had a wrist pain and none of the worker female had wrist pain. Amongst the health care professional male being the most prevalence of wrist pain followed by female with no respondents. Moreover, dentist rank the top spot in the wrist pain followed by radiologist, doctor, physiotherapist, lab technologist and nurse with no pain. It is indicated that only 2 respondents answer the question about while working is the pain or discomfort; 2 respondents as 'Worse'; none of respondents answer 'Same' and 'Worse'. Similarly, about the question after your shift is the pain or discomfort; 1 respondent answer as 'Less'; 1 as 'Same'; and none of the respondent answer 'Worse'. It is indicated that only 2 respondents answer the question about after a week away from work, is the pain or discomfort; 2 of the respondents answer as 'less'; while none of the respondent answer 'same' or 'worse'. Similarly about the question has the pain or discomfort caused you to take off work in the past; 2 respondents answer as 'No' and none of them answer 'Yes'. It is indicated that 2 respondent answer the question about how much does it interfere with your work; 2 of the respondents answer as 'Some interference'; while none of the respondents answer 'No interference' or 'Had to take time off due to pain'. Moreover, asked about the question how much does it interfere with your life outside of work; 1 respondents answer as 'Some interference'; 1 respondent 'Had to stop enjoying activity due to pain'. If you have to stop enjoying activity, how many days in the past off in the past work; 1 respondent answer '4 to 7 days'. In the last question of the neck pain, asked about the question how much does it interfere with your work; 2 respondents answer 'Some interference'; while none of the respondent answer 'Some interference'

**Table 5: Variables related to Wrist Pain**

Variable Related to Wrist Pain	Category	No.	%
Gender wise having wrist pain due to job	Male	2	100
	Female	0	0
While working is the pain or discomfort	Less	0	0
	Same	0	0
	Worse	2	100
After your shift, is the pain or discomfort?	Less	1	50
	Same	1	50
	Worse	0	0
After a week away from work, is the pain or Discomfort	Less	2	100
	Same	0	0
	Worse	0	0
Has the pain or discomfort caused you to take time off work in the past year?	Yes	0	0
	No	2	100

If yes, how many days off in all?	1 to 3 days	0	0
	4 to 7 days	0	0
To what degree has your pain or discomfort interfered with your work, your life outside of work, and your sleep in the past year?			
a) How much does it interfere with your work?	No Interference	0	0
	Some interference	2	100
	Has to take time off	0	0
	In the past year?		
If you had to take time off work, how many days off in the past year?	1 to 3 days	0	0
	4 to 7 days	0	0
b) How much does it interfere with your life outside of work	No interference	0	0
	Some interference	1	50
	Had to stop enjoying	1	50
	Activity due to pain		
If you had to stop enjoying, how many days in the past year did you stop it?	1 to 3 days	0	0
	4 to 7 days	1	100
c) How much does it interfere with your sleep?	No interference	0	0
	Some interference	2	100
	It affects me every night	0	0
Do you experience any other health problems related to your work?	Yes	0	0
	No	2	100

In table 6, the data was categorized according to occupation and gender wise having hand pain amongst the health care professional. It is found that 5 of the workers had a hand pain and 38 workers did not have hand pain. Amongst the health care professional male being the most prevalence of hand pain with 5 respondents and none of the female had hand pain. Moreover, dentist rank the top spot in the hand pain followed by physiotherapist, and lab technologist. It is indicated that 5 respondent answer the question about while working is the pain or discomfort; 1 respondent as 'Less'; 1 respondent as 'Same' and 3 respondents as 'Worse'. Similarly, about the question after your shift is the pain or discomfort; 2 respondent answer as 'Less'; 2 as 'Same'; and 1 as 'Worse'. It is indicated that 5 respondent answer the question about after a week away from work, is the pain or discomfort; 5 of the respondents answer as 'less'; while none of them answer 'same' or 'worse'. Similarly about the question has the pain or discomfort caused you to take off work in the past; 1 respondents answer as 'No' and 4 as 'Yes'. Further, if 'Yes' is the answer how many days off in all; 3 respondents took 1 to 3 days work off; followed by 1 worker took 4 to 7 days off. It is indicated that 5 respondent answer the question about how much does it interfere with your work; 5 of the respondents answer as 'Some interference'; while none of the respondents answer 'No interference' or 'Had to take time off due to pain'. Moreover, asked about the question how much does it interfere with your life outside of work; 5 respondents answer as 'Some interference'; none of the respondents answer 'Some interference'; or 'Had to stop enjoying activity due to pain'. If you have to stop enjoying activity, how many days in the past off in the past work; none of respondent answer this question. In the last question of the hand pain, asked about the question how much does it interfere with your work; 2 respondents answer 'No interference'; and 3 respondents answer 'Some interference'.

**Table 6: Variable related to Hand Pain**

Variable Related to Hand Pain	Category	No.	%
Gender wise having hand pain due to job	Male	0	0
	Female	5	100
While working is the pain or discomfort	Less	1	20
	Same	1	20
	Worse	3	60
After your shift, is the pain or discomfort?	Less	2	40
	Same	2	40
	Worse	1	20
After a week away from work, is the pain or Discomfort	Less	5	100
	Same	0	0
	Worse	0	0
Has the pain or discomfort caused you to take time off work in the past year?	Yes	4	80
	No	1	20
If yes, how many days off in all?	1 to 3 days	3	80
	4 to 7 days	1	20
To what degree has your pain or discomfort interfered with your work, your life outside of work, and your sleep in the past year?			
a) How much does it interfere with your work?	No Interference	0	0
	Some interference	5	100
	Has to take time off In the past year?	0	0
If you had to take time off work, how many days off in the past year?	1 to 3 days	0	0
	4 to 7 days	0	0
b) How much does it interfere with your life outside of work	No interference	0	0
	Some interference	5	100
	Had to stop enjoying Activity due to pain	0	0
If you had to stop enjoying, how many days in the past year did you stop it?	1 to 3 days	0	0
	4 to 7 days	0	0
c) How much does it interfere with your sleep?	No interference	2	40
	Some interference	3	60
	It affects me every night	0	0
Do you experience any other health problems related to your work?	Yes	0	0
	No	5	100

Lastly in table 7, the data was categorized according to occupation and gender wise having lower back pain amongst the health care professional. It is found that 3 of the health care workers had a lower back pain and 38 workers did not have upper back pain. Amongst the health care professional, female being the most prevalence of upper back pain while none of the male respondents had upper back pain. Moreover, physiotherapists rank the top spot in the upper back pain followed by lab technologist. It is indicated that 3 respondent answer the question about while working is the pain or discomfort; none of respondent answer 'Less'; 1 respondents as 'Same' and 1 respondents 'Worse'. Similarly, about the question after your shift is the pain or discomfort; 3 as 'Same'; and none of the respondent answer 'Worse' & 'Less'. It is indicated that 3 respondent answer the question about after a week away from work, is the pain or discomfort; 3 of the

respondents answer as 'same' ; while none of the respondent answer ' less' & 'worse'. Similarly about the question has the pain or discomfort caused you to take off work in the past; 2 respondents answer as 'Yes' and 1 respondent as 'No' answer. Further, if 'Yes' is the answer how many days off in all; 1 respondents took 1 to 3 days work off; followed by 1 worker each took 4 to 6 days off and 4 to 7 days. It is indicated that 3 respondent answer the question about how much does it interfere with your work; 3 of the respondents answer as 'Some interference'; while none of the respondents answer 'No interference' & 'Has to take time off in the past' 'Further asked about the question if yes how many days off in the past; only respondent answer 1 to 3 days. Moreover, asked about the question how much does it interfere with your life outside of work; 1 respondents answer as 'No interference'; 2 respondents answer 'Some interference'; and none of the respondent answer 'Had to stop enjoying activity due to pain'. In the last question of the upper back pain, asked about the question how much does it interfere with your work; 1 respondent answer 'No interference'; and 2 respondents answer 'Some interference'.

**Table 7: Variable Related to Lower Pain**

<b>Variable Related to Lower Back Pain</b>	<b>Category</b>	<b>No.</b>	<b>%</b>
Gender wise having lower back pain due to job	Male	0	0
	Female	3	100
While working is the pain or discomfort	Less	0	0
	Same	2	66.6
	Worse	1	33.4
After your shift, is the pain or discomfort?	Less	0	0
	Same	3	100
	Worse	0	0
After a week away from work, is the pain or Discomfort	Less	3	100
	Same	0	0
	Worse	0	0
Has the pain or discomfort caused you to take time off work in the past year?	Yes	2	66.6
	No	1	33.4
If yes, how many days off in all?	1 to 3 days	2	66.6
	4 to 7 days	1	33.4
To what degree has your pain or discomfort interfered with your work, your life outside of work, and your sleep in the past year?			
a) How much does it interfere with your work?	No Interference	0	0
	Some interference	3	100
	Has to take time off In the past year?	0	0
If you had to take time off work, how many days off in the past year?	1 to 3 days	0	0
	4 to 7 days	0	0
b) How much does it interfere with your life outside of work	No interference	0	0
	Some interference	3	100
	Had to stop enjoying Activity due to pain	0	0
If you had to stop enjoying, how many days in the past year did you stop it?	1 to 3 days	1	33.4
	4 to 7 days	0	0
c) How much does it interfere with your sleep?	No interference	1	33.4
	Some interference	2	66.6
	It affects me every night	0	0

Do you experience any other health problems related to your work?	Yes	0	0
	No	5	100

#### 4. DISCUSSION

Prevalence of musculoskeletal disorders varies in accordance with the health care professional workers wise. It may recalled that in term of work-related musculoskeletal disorders of the neck and shoulder pain, the prevalence of WRMSDs was higher than that of the pain that had musculoskeletal disorders of other part of the body . A total of 42 participants were participated in the study. So, the comparison analyses for work-related musculoskeletal disorders were done in regards to occupation, gender, body part and years of job experience etc. Moreover, gender had a significant association with musculoskeletal disorder in this study conducted in different department of teaching hospital in Maharishi Markandeshwar University, Mullana, Ambala,India. In general, female are being the female most prevalence of occurring work-related musculoskeletal disorders. In my study of 'repetitive stress injuries amongst the health care professional, males report a higher rate of prevalence than males for most major musculoskeletal disorder. Among health professional workers, 20 female report musculoskeletal conditions; among males is 22. Body part pain like neck pain, shoulder pain were reported by significantly, Moreover neck and shoulder pain are the first and second most common of musculoskeletal disorders due to work . A study conducted among the risk groups in a general group of Dutch population reported that top three of self-reported musculoskeletal pain was low back pain, shoulder pain, and neck pain.[20] Similarly in another study the prevalence of musculoskeletal complaints among physicians was low in comparison with other health care workers accounting to Knee pain (19.8%) as the top was the most common complaint among physicians, followed by low back (15.1%) and neck pain (9.8%).[21] Furthermore the prevalence of work-related musculoskeletal disorders in different body region in the last 12 months amongst the health care profession were reported to be more than 1 site involvement 46 (42.2%) followed by neck 19 (17.4%), shoulder 15 (13.8%), lower back 13 (11.9%), hips 8 (7.3%), hand/fingers 5 (4.6%).[23] A questionnaire survey was carried out among 42 health professional workers with a good respondent rate. Questions include data on the occurrence of musculoskeletal complaints in the past few days or month as well others. The prevalence of musculoskeletal was relatively very high amongst the dentist. The report revealed that there were associated with the occurrence of neck pain, shoulder wrist pain and hand pain. Further, nurses were reported lower back and complaints that last for some days off. The top five of self-reported musculoskeletal pain prevalence was neck pain,Shoulder pain, hand pain followed by lower back pain and wrist pain. A study conducted among nurses in Ibadan, South-west Nigeria was reported WMSDs occurred mostly in low back (44.1%), neck (28.0%), and knees (22.4%).[19] Compared with relevant study with dentists, a health care professions like physical therapists, registered nurses, and doctors indicated higher risk of musculoskeletal disorders.[22]

#### 5. CONCLUSION

Based on our study, the finding demonstrated the top three most prevalence occurring musculoskeletal disorder amongst health professional are dentist, radiographer and physiotherapist. Moreover, neck and shoulder pain being the most frequently affecting body part of health professional due to work. Finally, in the conclusion, similar studies with a large sample size may be required to order to get enough empirical data about the prevalence of work related musculoskeletal disorders

## CONSENT (WHEREEVER APPLICABLE)

"All authors declare that 'written informed consent was obtained from the patient (or other approved parties) for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editorial office/Chief Editor/Editorial Board members of this journal."

## ETHICAL APPROVAL (WHEREEVER APPLICABLE)

"All authors hereby declare that all experiments have been examined and approved by the appropriate ethics committee and have therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki."

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