Prevalence of work related musculoskeletal disorders among the medical staff of Health Centre of Moshood Abiola Polytechnic, Abeokuta

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ABSTRACT
Work- related musculoskeletal disorders (WRMSD) had been previously reported to have a high prevalence among hospital staff in different parts of the world.

Aims: The study aimed to assess the prevalence of self- reported WRMSD among medical staff of health care centre in Moshood Abiola Polytechnic, Abeokuta in Ogun state.

Material and Methods: A cross- sectional survey of 200 medical staff that completed the questionnaires given to them was conducted. A self- administered questionnaire which consisted of 27 items based on Nordic questionnaire for screening WRMSDs was given to each participant to evaluate their socio- demographic characteristics, work- related physical load characteristics, musculoskeletal symptom characteristics. All data were statistically analysed using percentiles and association between work- related physical load and WRMSD prevalence was done using statistical package.

Result: The study revealed a high prevalence of musculoskeletal pain among the medical staff.

Conclusion: The study found an overall half a year period of high prevalence rate of WRMSDs that could be reduced by sharing intensive patronage or patients' visitations to the clinic with the eighteen appointed private clinics to assist the institutional health care centre during registration or in case of emergency

Keywords: Medical staff, Pain, Work-related musculoskeletal disorders

I. INTRODUCTION
Medical staffs are the most valuable resource of health care delivery centre of a tertiary institution where both the students and entire staff enjoy adequately safe and available medical facilities for overall progress of the institution. The physical environment needs to be constructed to appeal and inspire employee who works within the premise. The workplace environment should be conducive to organizational needs facilitating interaction, privacy, formality, informality, functionality and cross-disciplinarily in order to ensure high levels of employee productivity in the institutions. There would be reduction of complaints, absenteeism and an increase in productivity when results of conducted extensive scientific research are applied to improve working environment. When ergonomics is done right, one can expect to see improved employee well-being and enhanced business performance. An overview of the incidence and the prevalence of musculoskeletal complaints among health care providers may assist inadequate prevention of work-related diseases and consequently provide a safer and healthier environment for them.

Occupational diseases are not only physical, psychological and social disease, but also have economic and security impacts when they reach a level of severity that directly affects working capacity, leading to absences and early retirement.[1] A number of studies have found that the mechanisms leading to work-related musculoskeletal pain are multi-factorial.[2] This pain can be attributed to numerous risk factors, including prolonged static postures, repetitive movements, suboptimal lighting, poor positioning, genetic predisposition, mental stress, physical conditioning, age and obesity.[3] It is generally agreed that the physical posture of the medical staffs while providing care, should be such that all muscles are in a relaxed, well-balanced and neutral

position. Postures outside of this neutral position for a prolonged period are likely to cause musculoskeletal discomfort.[4] The ergonomics influence among medical staff of health care centre in Moshood Abiola polytechnic, Abeokuta in Ogun state had not been surveyed. Hence, this study investigated the MSDs and the prevailing economic hazards among employees in Moshood Abiola Polytechnic, Abeokuta health care centre to determine the pertinent MSDs in terms of perception of pain experienced due to the rigors of their respective professional works and its effect on their job.

II. POTENTIAL RISK FACTORS FOR MSDS

Medical staffs are exposed to a range of work related risk factors that may result in various occupational diseases, of which musculoskeletal disorders (MSDs) are common. Musculoskeletal disorders are defined as musculoskeletal complaints, musculoskeletal symptoms or musculoskeletal pain that reflect a number of conditions, such as neck pain, back pain, shoulder pain, pain of limbs, carpal tunnel syndrome, myofacial dysfunction syndrome, a typical facial pain etc.[5] One end of the spectrum, MSD can be mild and infrequent; at the other end, MSDs can be severe, chronic and debilitating.[6] Fortunately, good ergonomic practices can drastically reduce the likelihood of severity of MSD.

III.   MATERIALS AND METHODS

3.1 Sampling selection and technique
This research study was an analytical cross sectional survey involving participants who are employees of Moshood Abiola Polytechnic, Abeokuta health centre, a tertiary institution in Ogun State, Nigeria.   3.2 Outline of the study
The outline of the project reference to the objectives described below:

3.2.1 Determination of the musculoskeletal disorder among the Medical Staff
The Medical Staff were required to complete a questionnaire. The questionnaire was administered to determine the specific risk factors associated with the back pain (Bp), Leg, neck, lower back and waist pains. The general information included the working hours (contact hours) per day, gender, age, etc

3.2.2 Anthropometric dimension of Medical Staff
Anthropometric dimensions such as height and weight and body mass index of the medical staff were measured and determined.

3.2.3 Questionnaire
Data Collection
A self–designed form that contained questions on gender, age, etc, as well as individual perspective of the workplace ergonomic hazards was used to collect data on demographics, work experience, as well as musculoskeletal symptoms using the Standardized Nordic Questionnaire.

3.3 DATA ANALYSIS:
The data collected were subjected to descriptive statistics using Excel 2010.

IV.   RESULT

Table1. Anthropometric and socio-demographic characteristics of participants

Variable	Characteristics	Frequency (200)	Percentage (%)
Gender	Male	153	40.6
Gender	Male	68	34.0
	Female	1324	66.0
Level of qualification	None	0	0.0
	Primary	18	9.0
	Secondary	28	14.0
	Tertiary	154	77.0
Marital status	Single	35	17.5
	Married	133	66.5
	Divorced	15	7.5
	Separated	8	4.0
	Widowed	9	4.5
Work experience	1-5\ year	22	11.0
	6–10 years	52	26.0
	11–15 years	88	44.0
	16–20 years	20	10.0
	21 and above	18	9.0
Body mass	<18.4 underweight	25	12.5

	18.5-24.9 Normal	140	70.0
	25.0-39.9 Over weight	29	14.5
	>40.0 Obese	6	3.0
Age(years)	25-35	65	32.5
	36-45	52	26.0
	46-55	45	22.5
	56-65	38	19.0
Experienced at least a	Yes	178	89.0
	No	22	11.0
Taking regular physical	Yes	158	79.0
Exercises	No	42	21.0
Allowed use of work	Yes	168	84.0
		32	16.0

V.   DISCUSSION

Prevalence of self-reported musculoskeletal complaints in studied participants

Table1 shows the anthropometric and socio-demographic characteristics of participants All 200 medical staff had at least one work-related musculoskeletal symptom in the previous year with an overall period prevalence rate of 93%. The types of symptoms present were pain (79.0%), stiffness (4.0%), fatigue (7.5%), discomfort (11.0%), clicks/ sounds (7.5%) and others (19.0%). The region of symptoms was ankle (13.0%), elbow (8.0%), upper back (19.0%), lower back (67.0%), wrist/hand (73.0%), neck (78.0%), knee (22.0%), shoulder (71.0%), and hip (32.5%). Number of regions affected were two (84.0%), three (53.0%), four or more (17.0%). Recurrent symptoms were present in 68.0% [Table 2].

Table2: Type of musculoskeletal complaints by the participants

Musculoskeletal complains	Subtypes	No of participants	Percentage prevalence
Type	Pain	158	79.0
	Stiffness	8	4.0
	Fatigue	15	7.5
	Discomfort	22	11.0
	Click sounds	15	7.5
	Others	38	19.0
Nature of symptoms	Constant	30	15.0
	Intermittent	47	23.5
	Mixed	126	63.0
Influence of work-related factors	Predisposing	150	75.0
	Aggravating	145	72.5
	Contributing	102	51.0
Region of symptoms	Ankle/foot	26	13.0
	Elbow/forearm	16	8.0
	Upper back	38	19.0
	Lowerback/Pelvis	134	67.0
	Wrist/hand	146	73.0
	Neck	156	78,0
	Knee/Legs	44	22.0
	Shoulder/arm	142	71.0
	Hip/thigh	65	32.5
Number of body regions affected	One	186	93.0
	Two	168	84.0
	Three	106	53.0
	Four or more	34	17.0

Recurrent (3 days duration symptoms after a month interval	Yes	136	68.0
	No	64	32.0

Comparison between anthropometric characteristics and prevalence of musculoskeletal disorders

Gender

Male medical staff had greater prevalence of musculoskeletal symptoms in wrist/hand, n = 46/68 (67.64%) shoulder, n = 44/68 (64.71%)hip, n =38/68 (55.88%), low back, n = 38/68 (55.88%), and upper back, n = 36/68 (52.94%) regions while the female medical staff reported symptoms greater in low back, n = 112/132(84.85%),)neck, n = 102/132 (77.27%), wrist/hand, n = 98/132 (74.24%), and shoulder, n = 93/132 (70.45%) regions [Table 3 and Fig. 1].

Age

Among medical staff with 25-35 years age group, wrist/hand symptoms, n = 42/65(64.62%) were most prevalent, followed by shoulder, n = 40/65(61.54%) and neck, n = 38/65(58.46%). In 36-45 years, medical staff mostly had symptoms in ankle, n = 41/52 (78.85%), upper back, n = 38/52 (73.08%), shoulder, n = 33/52(63.46%), neck and kneel each had, n = 32/52(61.54%).

Among 46-55 years age, medical staff had greater symptoms in wrist/hand, n = 40/45 (88.89%), low back, n = 32/45 (71.11%), upper back, n = 30/45 (66.67%) and for those between 56-65 years, knee, n = 31/38 (81.58%) was most common, followed by neck, n = 30/38 (78.95%) and upper back, n = 25/38 (65.79%) [Table 4 and Fig.2].

Body Mass Index (BMI)

Underweight medical staff (BMI < 18.4kg/m^2) had greater prevalence in elbow, n = 14/25(56.0%), low back, n = 13/25 (52.0%) and neck, n = 12/25 (48.0%) .

Normal weight medical staff (BMI = 18,5 - 2 4.9 kg /m^2) had greater symptom prevalence in neck, n = 68/140 (48.57%), knee, n = 65/140 (46.43%), and wrist/hand, n = 43/140 (30.71%). Overweight dentists (BMI = 25.0 -39.9 kg/m^2) had greater symptom prevalence in low

back, n = 22/29 (75.87%), knee, n = 20/29(69.0%),neck and ankle each had, n = 18/29(62.07%), and Obese dentists (BMI $\geq$ 40 kg/m^2) had greater prevalence in neck and shoulder with each having n = 3/6 (50.0%), wrist/hand, knee and ankle each had n = 2/6 (33.3%) [Table 5 and Fig. 3].

Qualification level of the participants

Medical staff who had primary education only had greater prevalence of musculoskeletal symptoms in elbow, n = 14/18(77.78%), low back and upper back each had, n = 13/18 (72.22%), those with secondary education had greater prevalence of musculoskeletal symptoms in knee and elbow with each having, n = 22/28 (78.57%), neck, n = 18/28 (64.29%) shoulder, n = 17/28 (60.71%) while those with tertiary education had greatest prevalence of musculoskeletal symptoms in neck, n = 106/154 (68.83%), upper back, n = 71/154(46.1%) and wrist/hand, n = 56/154 (36.63%). [Table 6 and Fig. 4]

Working experience of the participants

Medical staff with less than 5 years had greater prevalence of elbow, n = 14/22(63.63%), lower and upper back each had, n = 13/22 (59.09%), neck, n = 12/22 (54.55%). Medical staff with working experience between 6 and 10 years had greater prevalence of hip, n = 28/52 (53.85%), knee and elbow each had, n = 22/52 (42.31%). Medical staff with working experience between 11 and 15 years had greater prevalence of upper back , n = 71/88 (80.68%), knee, n = 60/88 (68.18%) and wrist/hand had, n = 56/88 (63.64%). Medical staff with working experience between 16 and 20 years had greater prevalence of low back, n = 17/20 (85.0%), upper back, n = 14/20 (70%), hip, n = 13/20 (65.0%) and those with working experience from 21years and above had greater prevalence of knee, n = 10/18 (55.56%), neck, shoulder, and elbow each had n =8/18 (44.44%). [Table 7and Fig. 5].

Table3: Prevalence of musculoskeletal symptoms in different body regions among the participants

Gender	Number	Neck	Wrist/ hand	Low back	Shoulder	Hip	Knee	Upper back	Ankle	Elbow
Male	68	26	46	38	44	38	28	36	24	14
Female	132	102	98	112	93	88	66	86	84	66
Total	200	128	144	150	137	126	94	122	108	80

Table 4: Prevalence of musculoskeletal symptoms in different body regions among age-group of the participants

Age(years)	Number	Neck	Wrist/hand	Low back	Shoulder	Hip	Knee	Upper back	Ankle	Elbow
25-35	65	38	42	33	40	30	22	32	22	34
36-45	52	32	28	20	33	28	32	38	41	26
46-55	45	26	40	32	25	24	20	30	21	20
56-65	38	30	22	18	23	16	31	25	16	18
Total	200	126	132	103	121	98	105	125	100	98

Table 5: Prevalence of musculoskeletal symptoms in different body regions among four categories of body mass index of the participants

Body mass index (Kg/m^2)	Number	Neck	Wrist/hand	Low back	Shoulder	Hip	Knee	Upper back	Ankle	Elbow
$\leq$18.4	25	12	10	13	10	9	8	9	2	14
18.5-24.9	140	68	43	32	27	28	65	16	14	22
25.0-39.9	29	18	15	22	17	12	20	14	18	13
$\geq$40	6	3	2	1	3	1	2	1	2	1
Total	200	101	70	68	57	50	95	40	36	50

Table 6: Prevalence of musculoskeletal symptoms in different body regions among qualifications level of the participants

Education	Number	Neck	Wrist/hand	Low back	Shoulder	Hip	Knee	Upper back	Ankle	Elbow
Primary	18	12	10	13	10	9	8	13	2	14
Secondary	28	18	13	12	17	8	22	16	14	22
Tertiary	154	106	56	48	44	52	60	71	44	36
Total	200	136	79	73	71	69	90	100	60	72

Table 7: Prevalence of musculoskeletal symptoms in different body regions among work experience of the participants

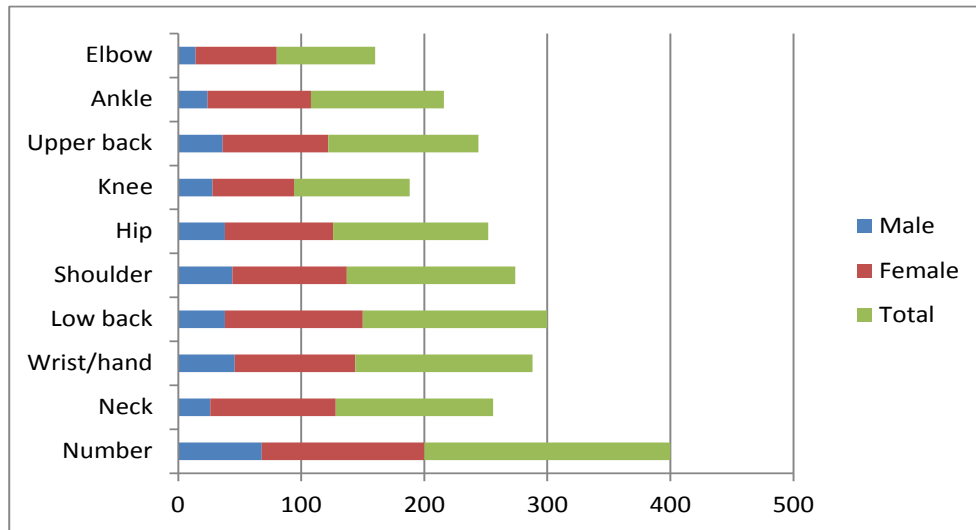| Work experience (years)	Number	Neck	Wrist/hand	Low back	Shoulder	Hip	Knee	Upper back	Ankle	Elbow
1-5	22	12	10	13	10	9	8	13	2	14
6-10	52	18	13	12	17	28	22	16	14	22
11-15	88	40	56	48	44	52	60	71	44	36
16-20	20	10	12	17	6	13	6	14	12	10
$\geq$21	18	8	6	4	8	7	10	5	6	8
Total	200	88	97	94	85	109	106	119	78	90

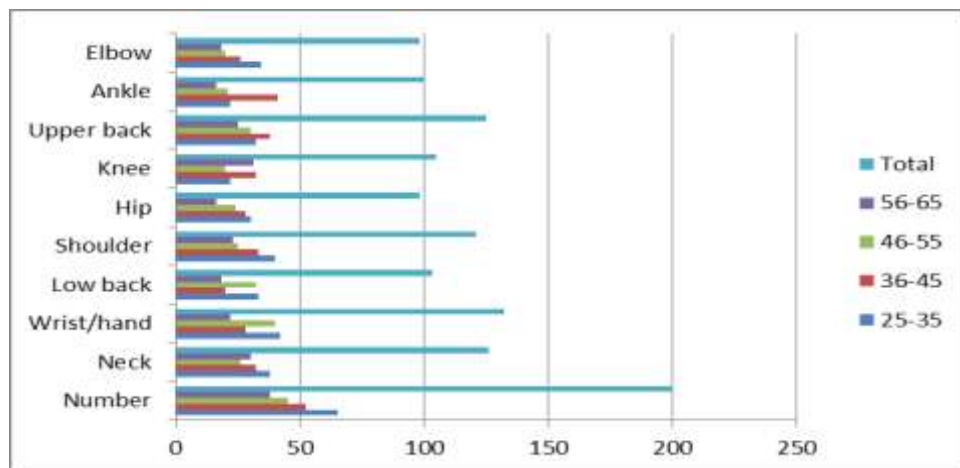Fig.1: Comparison of regions affected with work-related musculoskeletal symptoms in gender

Fig.2: Comparison of regions affected with work-related musculoskeletal symptoms among age-group of the participants
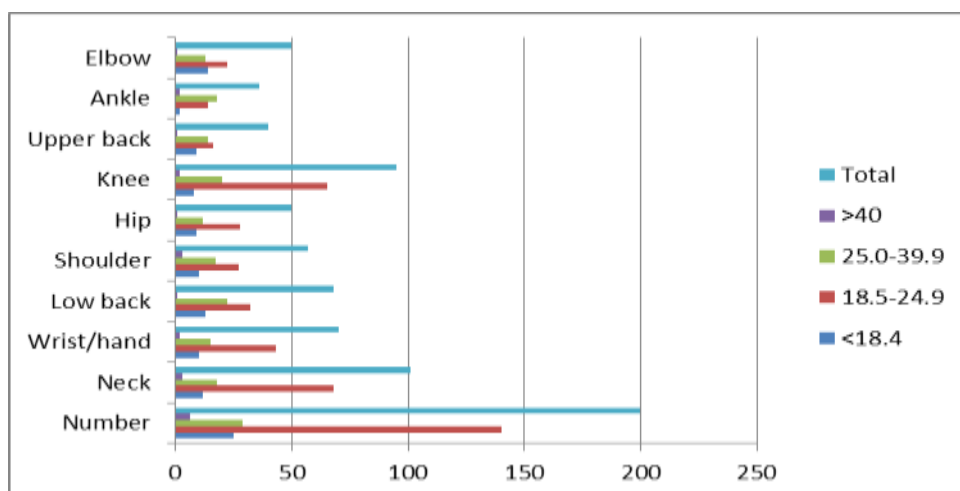

Fig.3: Comparison of regions affected with work-related musculoskeletal symptoms in different body regions among four categories of body mass index of the participants
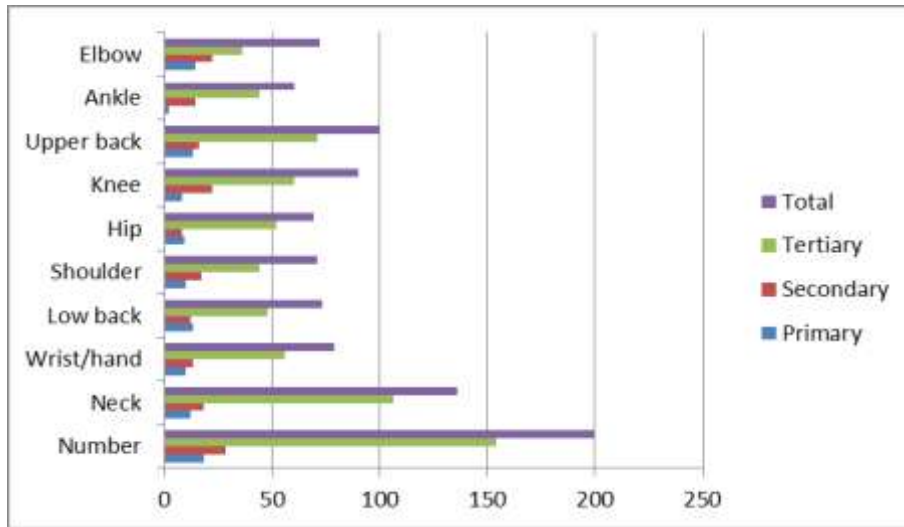
Fig. 4: Comparison of musculoskeletal symptoms in different body regions among qualifications level of the participants
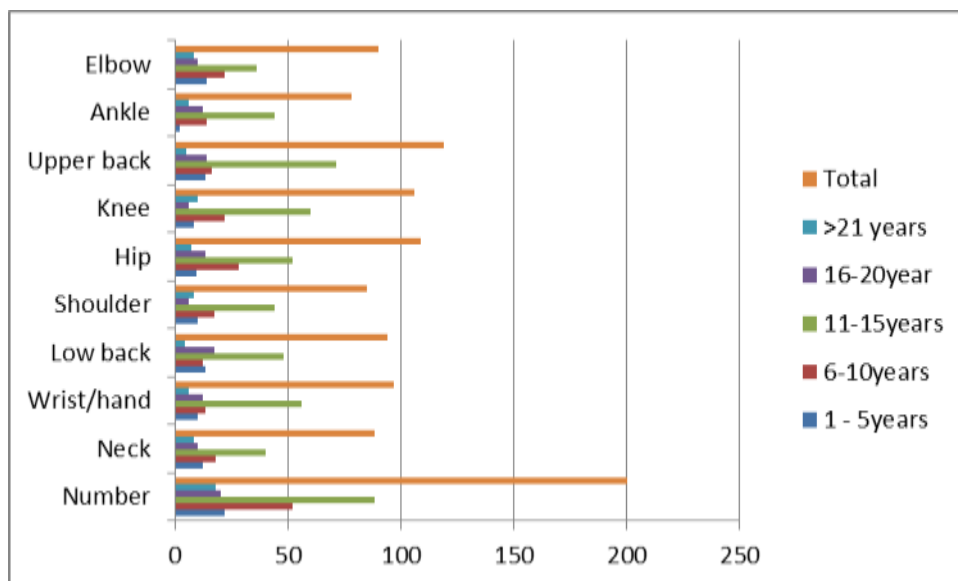
Fig. 5: Comparison of musculoskeletal symptoms in different body regions among work experience of the participants

This study examined the prevalence and distribution of self-reported musculoskeletal complaints among medical staff of Moshood Abiola Polytechnic health centre.

The half-year period prevalence rate observed in this study was highest at 93% very close to findings of Lalumandier et al.,[7] which was done on a mixed population of personnel, dentists and dental auxiliaries. The reasons for the higher prevalence rate may not only be attributable to the protective nature of the Nordic questionnaire, but also to the actual finding in this population. This study was comparatively on homogenous study population of medical staff. The number of

regions involved with symptoms in greater in this study with medical staff reporting multiple regions affected with WRMSDs. The cause could be due to lack of routine physical activity [8] and work-related stress. [9,10] The study found a significant association between lack of physical activity and number of regions affected and also with percentage of medical staff with recurrence for symptoms.

VI. CONCLUSION

An overall half-year period prevalence rate of 93% for WRMSDs among medical staff was achieved. Prevalence of self-reported work-related musculoskeletal pain was 79.0%. In order to prevent decline in work performance and incidence of WRMSDs among medical staff, adequate measures for improving education and ergonomic evaluations are indicated on a large scale.

VII. RECOMMENDATION

Measures to be adopted by symptomatic medical staff for symptom relief are the following:

Taking frequent breaks between patients, modifying work schedule, using modified ergonomic tools, performing self‑ stretching, undertaking physical therapy treatment, adjusting/modifying work station, taking medications for symptom relief, reducing working hours on the patients, visiting a general practitioner, orthopaedic surgeon/physical therapist and avoiding medical care services or doing nothing at work until health normalcy is restored.

VIII. ACKNOWLEDGEMENT

REFERENCES

[1].   Fulton-Kehoe D, Franklin G, Weaver M, Cheadle A.(2000) Years of productivity lost among injured workers in Washington State: Modeling disability burden in workers' compensation. Am J. Ind Med.; 37:656–62. [PubMed] [Google Scholar]

[2].   Stewart WF, Ricci JA, Chee E, Morganstein D, Lipton R. (2003) Lost productive time and cost due to common pain conditions in the US workforce. JAMA. ; 290:2443–54. [PubMed] [Google Scholar]

[3].   Smith DR, Wei N, Zhang YJ, Wang RS.(2006) Musculoskeletal complaints and psychosocial risk factors among physicians in mainland China. Int J Ind Ergon. ; 36:599–603. [Google Scholar]

[4].   Luxembourg: European Communities; (2004). European Communities Work and health in the EU, a statistical portrait. [Google Scholar]

[5].   Karahan A, Kav S, Abbasoglu A, Dogan N.(2009) Low back pain: Prevalence and associated risk factors among hospital staff. J Adv Nurs.; 65:516–24. [PubMed] [Google Scholar]

[6].   United States: Department of labour; (2005). Labour statistics Workplace injuries and illnesses in 2005. [Google Scholar]

[7].   Lalumandier JA, McPhee SD, Parrott CB, Vendemia M. Musculoskeletal pain (2001): Prevalence, prevention and differences among dental office personnel. Gen Dent; 49:160-6.

[8].   Forde MS, Punnett L, Wegman DH. (2002) Pathomechanisms of work-related musculoskeletal disorders: Conceptual issues. Ergonomics; 45:619-30.

[9].   Karsh BT, Smith MJ.(2006) Theoretical issues in understanding work-related musculoskeletal disorders causation. Theoretical Issues Ergonomics Sci; 7:1-2.

[10]. Faucett J. (2005) Integrating psychosocial factors into a theoretical model for work-related musculoskeletal disorders. Theoretical Issues Erg Sci2005; 6:531-50.