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# Ergonomics in the Teaching Profession: Musculoskeletal Disorders among Faculty Members of Colleges and Departments of Sardar Patel University

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*Abstract: Musculoskeletal Disorders (MSDs) are a common occupational health in the teaching profession which although long neglected has attracted increasing concern as recent years. The aim of this study is to assess work related musculoskeletal disorders among the faculty members and to assess the postures adopted by them. A self-structured questionnaire based study was conducted by a lottery randomly selected faculty members. Among the 114 completed questionnaires the prevalence of upper back, knee joint and shoulder was 57%, 37%and 30% respectively. Pain among teachers was associated with factors such as age, gender, job experience and teaching hours. Data was analyzed by SPSS – version 20 using appropriate statistical test. P-values less that 0.05 were considered among the subjects. Factors associated with MSDs were prolong standing, (52%, n=115), writing on a blackboard (26%, n=115). These findings highlighted specific actions, such as stretching (50%, n=115) and bending (49%, n=115) while sitting and side bending (37%, n=115), stretching (35%, n=115) and neck bending (35%, n=115) while standing in a class room. The findings draws an attention the ergonomic intervention programs to be implemented to prevent reduce the development of MSDs amongst teachers.*
*Keywords: Musculoskeletal-disorders, postures, faculty-members, colleges/departments, Sardar Patel University*

## I. INTRODUCTION

Musculoskeletal disorders (MSDs) affect the body's muscles, joints, tendons, ligaments and nerves. Most work-related musculoskeletal disorders (WRMSDs) develop over time and are caused, either by the work itself or by the employees' working environment. According to the National Institute for Occupational Safety and Health in United States, MSDs are among the most important and common work-related diseases, and the main cause of absenteeism. The work of teachers has a fundamental social value because education can ensure economic growth, and technical and scientific development in any society (Vedovato T. G, Monteiro I. 2014). Musculoskeletal disorders (MSD) represent a common occupational problem in the teaching profession and teachers represent an occupational group among which there appears to be a high prevalence of MSD. A teacher spends the majority of the day standing in the classroom, walking through the classroom and be able to work in tight spaces between desks, teaching students, writing on the blackboard, preparing lessons, grading assignments, and an administrative work, which can cause adverse mental and physical health concerns(Chan AHS et al, 2010; Chong EYL, Chan AHS, 2010). The prolonged static posture, body mechanics, continuous nature of the job without optimum rest intervals put the teachers in a vulnerable position to develop WMSDs (Liping Li et al, 2012). Zahoor Ahmed, etal. (2018) study result shows that the frequency of low back pain (46%) and Neck Shoulder Pain (47%) was among 894 teachers. The frequency of female teachers is higher than male teachers. The self-reporting neck shoulder pain associated with Prolong sitting, standing and Static Posture. The aim of this study is to assess the prevalence of musculoskeletal disorders among faculty members of Sardar Patel University, Gujarat – India.

## II. METHODS AND MATERIALS

A study was conducted among faculty members in lottery randomly selected colleges and department of Anand and Vallabh Vidyanagar area, Sardar Patel University, Gujarat – India. One hundred and fourteen (114) colleges and departments were randomly selected from a list of 140 colleges and departments obtained from the university academics section. All teachers employed in the selected colleges and departments (approximately 3 faculty member per college/department) were invited to participate in the study. A total of 144 self-administered questionnaires were distributed. The questionnaire was constructed according to the demographic

variables, teaching history, and information on MSDs (with possible associated occupational risk factors), formed the basis of the questionnaire.

Ethical considerations: Permission to conduct study within selected colleges and departments was obtained from the Principals and Head of the departments of the selected colleges and departments. The teachers received letters outlining the study, explaining their voluntary participation, and assuring confidentiality of the data provided. A letter of informed consent was signed by each participant. Statistical analyses Data were analysed using the SPSS statistical package (version 22), with statistical significance set at $p \leq 0.05$. Descriptive analyses were performed on categorical variables (summarised as frequencies and percentages). An Association of factors with MSDs were assessed using bi-variates analyses (chi-squared tests).

## III. RESULTS AND DISCUSSIONS

TABLE I
GENERAL CHARACTERISTICS OF RESPONDENTS (N=144)

| Age Group | Number | Percentage (%) |
|---|---|---|
| 24-34 | 68 | 47 |
| 35-45 | 53 | 37 |
| 46 & above | 23 | 16 |
| Total | 144 | 100 |
| Gender | Number | Percentage (%) |
| Male | 64 | 44 |
| Female | 80 | 56 |
| Total | 144 | 100 |
| Education qualification | Number | Percentage (%) |
| Graduation | 10 | 7 |
| Post-Graduation | 75 | 52 |
| M.Phil. | 03 | 02 |
| Ph.D. | 53 | 37 |
| Any other | 03 | 02 |
| Total | 144 | 100 |
| Class interval | Number | Percentage (%) |
| 2-9 | 102 | 71 |
| 10-17 | 32 | 22 |
| 18 & above | 10 | 07 |
| Total | 144 | 100 |
| Marital Status | Number | Percentage (%) |
| Unmarried | 34 | 24 |
| Married | 109 | 76 |
| Divorced | 01 | 0.7 |
| Total | 144 | 100 |

(Table I) with regards to age 47% of the total sample was in the 24-34 year of age group and 16% were in the 46 & above years of age group.

The 'gender' distribution of the final sample was 44% males and 56% females. The majority of the study subjects' education qualification' were 37% doctorates followed by 52% post graduates.

The subjects had worked ranging from 2 years to 27 years of experience. Two to nine years of experience has the highest frequency of 102 respondents (71%), 10-17 years of experience has the second highest frequency of 32 respondents (22%) and third highest frequency of 10 respondents was 18 & above years of experience 07%. The majority of the participants were 'married' (76%). Twenty four percent of the participants were 'unmarried'.

TABLE II

WORKING PATTERN OF RESPONDENTS (N=144)

| Working hours of job | Number | Percentage (%) |
|---|---|---|
| 6 Hours | 73 | 51 |
| 7 Hours | 46 | 32 |
| 8 Hours | 20 | 14 |
| Any Other(5 Hours) | 05 | 03 |
| Total | 144 | 100 |
| Teaching Hours | Number | Percentage (%) |
| 3 Hours | 67 | 46 |
| 4 Hours | 56 | 39 |
| 5 Hours | 21 | 14 |
| Total | 144 | 100 |
| Number of Practicals | Number | Percentage (%) |
| 2 Hours | 27 | 19 |
| 3 Hours | 42 | 29 |
| 4 Hours | 06 | 04 |
| Any Other(No Practical) | 69 | 48 |
| Total | 144 | 100 |
| Teaching Schedule | Number | *Percentage (%) |
| Continuous | 47 | 33 |
| Alternate Hours | 59 | 41 |
| Combination Of Theory & Practical | 44 | 31 |
| Any Other (Practical) | 01 | 0.6 |
| Rest break between activity | Number | *Percentage (%) |
| Yes | 113 | 78 |
| 5 To 10 Minutes | 71 | 49 |
| 10 To 20 Minutes | 20 | 14 |
| 20 To 30 Minutes | 14 | 08 |
| >30 | 06 | 4 |
| No | 32 | 22 |
| During rest break | Number | *Percentage (%) |
| Sitting In A Staffroom/Cabin | 68 | 47 |
| Work For The Next Teaching Class | 60 | 42 |
| Exercises | 05 | 03 |
| Refreshment | 52 | 36 |
| Any other  (paper work) | 01 | 0.6 |
| Lunch Break Time | Number | Percentage (%) |
| 30 Minutes | 79 | 55 |
| 20 Minutes | 21 | 15 |
| 1 Hour | 25 | 17 |
| Any Other(40 Minutes) | 19 | 13 |
| Total | 144 | 100 |
| Travel | Number | Percentage (%) |
| Car | 36 | 25 |
| Public Transport | 34 | 24 |
| Walk | 08 | 05 |
| Any Other(Two Wheeler) | 66 | 46 |
| Total | 144 | 100 |
| Any Other (No Practicals) | 69 | 48 |
| Total | 144 | 100 |

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Table II with regards to daily 'Working hours' almost fifty one (51%) of the teachers spent 6 hours daily on teaching while 32% spent at least 7 hours Fourteen percent respondents spent 8 hours daily. The result in table 4.3 shows that the majority of the teachers (45%) teach 3 hours class per day, while 38% of the teachers teaches 4 hours per day. In addition almost 29% teachers take 3 hours practicals per day, 19% takes 2 hours practicals per day. Only four percent takes 4 hours Practicals Per day. The result in table 4.3 also shows that the majority of the teachers (41%) have had 'alternate' teaching lectures per day, 33% have had 'continuous' teaching lectures per day while, 31% teachers have had the combination of theory and practical both. The data also reveals that teachers take rest between activities most commonly of 5 to 10 minutes duration. Whereas 47% of the respondents 'sits in a staff cabin' during rest break, Forty two percent of the respondents 'work for the next teaching classes. The majority of the respondents (55%) lunch breaks time are of 30 minutes followed by the '1 hours' (17%), '20 minutes' (15%). Travelling by two-wheeler was the most common transportation mode to reach the college by 46% of the respondents.

Work related Musculoskeletal Disorder experienced by the Respondents

Table III Complain of Musculoskeletal Disorder   (N=144)

| Musculoskeletal disorder during job | Number | Percentage (%) |
|---|---|---|
| Yes | 115 | 80 |
| No | 29 | 20 |
| Total | 144 | 100 |
| Experienced musculoskeletal years | Number | *percentage (%) (n=115) |
| Less than 3 years | 35 | 30 |
| 4 to 7 years | 40 | 35 |
| 8 and above | 40 | 35 |
| Pain due to | Number | *percentage (%) |
| Writing on black board | 30 | 26 |
| Standing | 60 | 52 |
| Sitting | 14 | 12 |
| Carrying books | 05 | 04 |
| Any other (carrying laptop) | 06 | 05 |
| Day of pain | Number | *percentage (%) (n=115) |
| Morning | 10 | 09 |
| Afternoon | 22 | 19 |
| Evening | 69 | 60 |
| Any other (night) | 14 | 12 |
| Total | 115 | 100 |

| Medical Visit | Number | *Percentage (%) |
|---|---|---|
| Yes | 60 | 52 |
| Hospitalization | 07 | 06 |
| O.P.D. | 30 | 26 |
| On Medication | 05 | 04 |
| Any other (Exercise And Physiotherapy) | 03 | 03 |
| No | 10 | 09 |

| Awareness topics | Number | Percentage (%) |
|---|---|---|
| Ergonomics | 27 | 19 |
| Musculoskeletal Disorder | 56 | 39 |
| Postural Problem | 40 | 28 |
| Any Other(No) | 21 | 14 |
| Total | 144 | 100 |
| Foot Wear during job hours | Number | Percentage (%) |
| High heels | 04 | 03 |
| Platform heels | 31 | 22 |
| Flat Chappals | 76 | 52 |
| Any other (Shoes) | 33 | 23 |
| Total | 144 | 100 |

*(Total exceeds due to multiple answers)

Table III presents the musculoskeletal disorder occurrence during job. It was reported by 80% of the respondents had the musculoskeletal disorder during job. Where, 75% of the respondents experienced pain since last four years. Prolonged standing during job hours has caused the musculoskeletal disorders among respondents (52%), whereas, 26% respondents complained of musculoskeletal disorders due to writing on black board. Further, majority of the respondents (60%) complained the occurrence of musculoskeletal disorders during 'evening' phase of the day. Majority of the respondents were aware of the term musculoskeletal disorder (39%) and postural problem (28%). Data reveals that 52% of the respondents' worn flat chappals at work whereas 23% and 22% of the respondents wear shoes and platform heels respectively.

Table IV Types of posture adopted during work                    (N = 144)

| Sr. No. | Types of posture adopted | Number | *Percentage (%) |
|---|---|---|---|
| Sitting posture | | | |
| 1 | Bending | 70 | 49 |
| 2 | Stretching | 72 | 50 |
| 3 | Side back bending | 35 | 24 |
| 4 | Neck bending | 25 | 17 |
| 5 | Side neck bending | 20 | 13 |
| 6 | Uneven legs standing | 20 | 13 |
| 7 | Raised shoulder | 22 | 15 |
| 8 | Twisted | 15 | 10 |
| 9 | Stooping | 25 | 17 |
| Standing Posture | | | |
| 1 | Bending | 35 | 24 |
| 2 | Stretching | 50 | 35 |
| 3 | Side back bending | 54 | 37 |
| 4 | Neck bending | 50 | 35 |
| 5 | Side neck bending | 39 | 28 |
| 6 | Uneven legs standing | 36 | 25 |
| 7 | Raised shoulder | 26 | 19 |
| 8 | Twisted | 35 | 24 |
| 9 | Stooping | 19 | 14 |

*(Total exceeds due to multiple answers)

Table IV shows that stretching (72%), bending (70%) was more observed at work in a sitting posture by the respondents. Further, side back bending (54%), stretching (50%), neck bending (50%) were the frequent adopted postures by the respondents while standing at workplace. Since due to different activities like frequent reading, marking of assignments, writing on black board might force them to adopt such postures.

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Table V Types of furniture in the class rooms (N = 144)

| Sr. No. | Existing furniture in the class rooms | Number | *Percentage (%) |
|---|---|---|---|
| 1 | Non-adjustable Chair | 64 | 44 |
| 2 | Adjustable chair | 46 | 32 |
| 3 | Wooden Platform | 103 | 71 |
| 4 | Racks | 02 | 01 |
| 5 | Shelves | 23 | 16 |
| 6 | Table | 103 | 71 |
| 7 | Table with Drawer | 05 | 03 |
| 8 | De-attachment stool | 02 | 01 |
| 9 | Cupboard | 27 | 19 |
| 10 | White Board | 46 | 32 |
| 11 | Black Board | 112 | 78 |
| 12 | Electric Board | 02 | 01 |

*(Total exceeds due to multiple answers)

Table V shows the different types of furniture used by the faculty members in the classrooms. One can see that old style black board (78%) was still used by most of the faculty members. It could be one of the reasons of pain in shoulder and neck region. Wooden platform board (71%) was observed in most of the colleges/departments. Non-adjustable chairs (44%) were observed and this also could be one of the reasons of musculoskeletal disorders.

Adjustable chair (32%) and white board (32%) were observed in few of the colleges/departments. This type of chair gives a comfort zone while working and due to white board less of shoulder and neck pain was recorded.

Relationship between man and machine has played a vital role in any profession. Here, in this recent study data states that 64% of the chair was fixed, which an individual has to sit and work in an unnatural body posture.

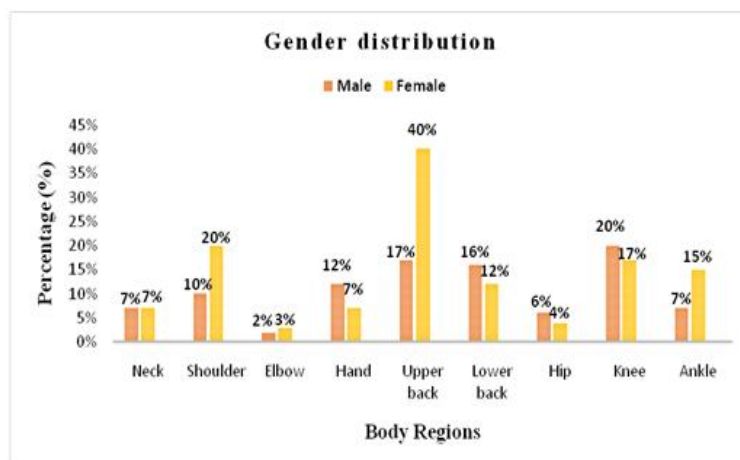Graph I Complain of Musculoskeletal disorder at different Body Regions          (N=144), (n=115)
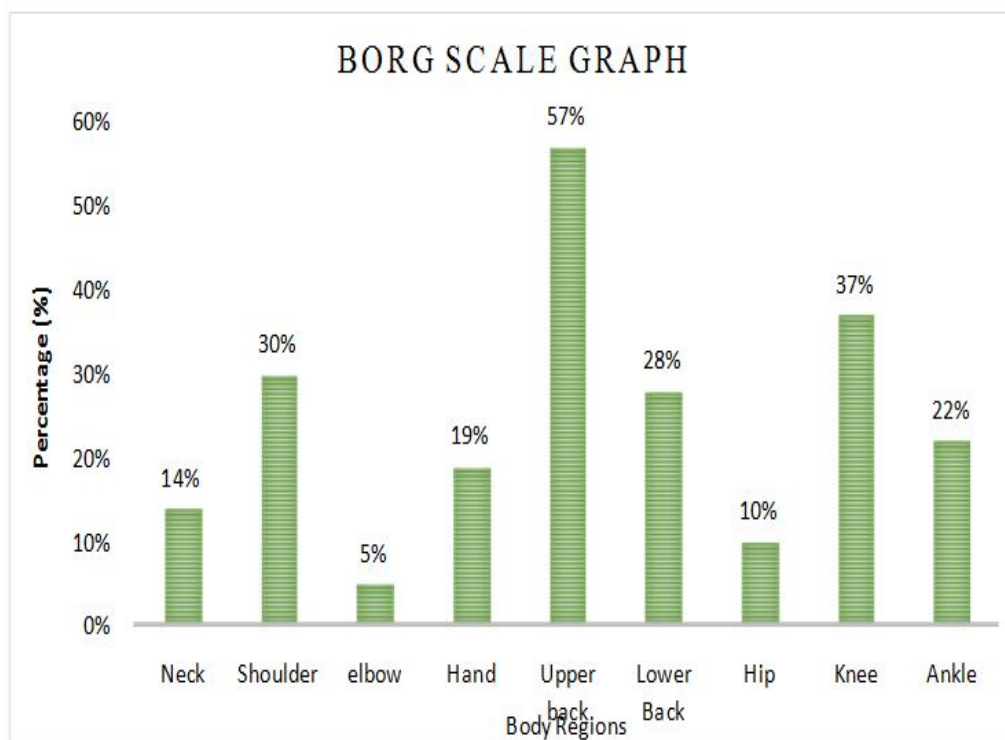


Graph I indicates that most of the respondents have complained upper back (57%), knee joint pain (37%) and shoulder pain (30%).

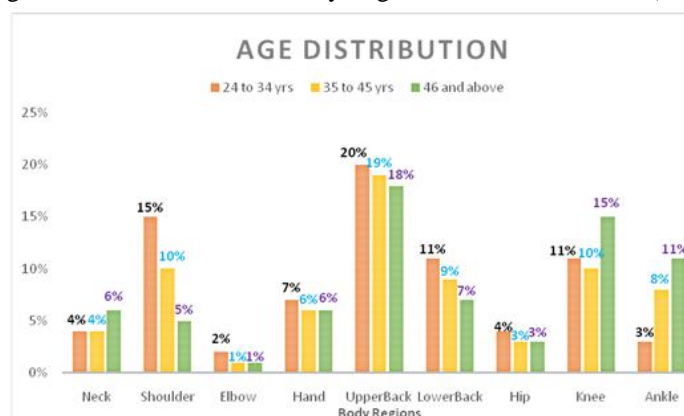Graph II Gender Distribution Access to Body Regions                    (N=144), (n=115)



Graph II shows the gender distribution of the final sample was 40% females (upper back), 20% (shoulder pain), whereas 20% males (knee joint pain), 17% (upper back).

Graph III Age Distribution Access to Body Regions                    (N=144) (n=115)



Graph III shows the age distribution of the respondents were upper back was complained by 20% of the 24-34 years of age group people 11% knee joint pain, 15% shoulder pain whereas 19% 'upper back' was found in 35-45 years age group and 18% upper back, and 11% ankle joint was recorded in 46 and above age groups.

Graph IV Job Experience Distribution Access to Body Regions                    (N=144), (n=115)
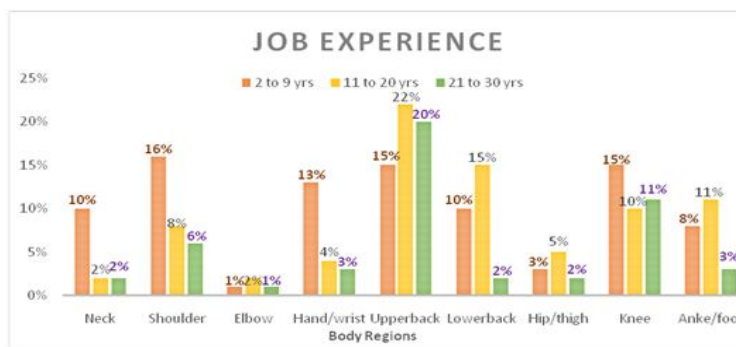


Graph IV states that 22% and 20% (upper back) was seenn more by the respondents whose job experience was of 11-20 years and 21-30 years group age.

Table VI (a) Association between respondents Age and Musculoskeletal Disorder         (N=144), (n=115)

| Body Regions | | 24-34 Years | 35-45 Years | 46 and above years | p-value |
|---|---|---|---|---|---|
| Shoulder Pain | Yes | 76 (84.4%) | 29 (64.4%) | 5 (55.6%) | |
| | No | 14 (15.6%) | 16 (35.6%) | 4 (44.4%) | 8.963 |
| | Total | 90 (100%) | 45 (100%) | 9 (100%) | P<0.05=0.03 |
| Upperback pain | Yes | 23 (51.1%) | 50 (55.6%) | 5 (55.6%) | |
| | No | 22 (48.9%) | 40 (44.4%) | 4 (44.4%) | 2.46 |
| | Total | 45 (100%) | 90 (100%) | 9 (100%) | P<0.05=0.01 |
| lowerback pain | Yes | 73 (81.1%) | 34 (75.6%) | 5 (55.6%) | |
| | No | 17 (18.9%) | 11 (24.4%) | 4 (44.4%) | 3.279 |
| | Total | 90 (100%) | 45 (100%) | 9 (100%) | P<0.05=0.03 |
| Knee joint Pain | Yes | 30 (66.7%) | 66 (73.3%) | 6 (66.7%) | |
| | No | 15 (33.3%) | 24 (26.7%) | 3 (33.3%) | 0.726 |
| | Total | 45 (100%) | 90 (100%) | 9 (100%) | P<0.05=0.02 |

* Statistical Significance at P=< 0.05

Table VI ( b) Association between Gender and Musculoskeletal Disorder         (N=144), (n=115)

| Body Regions | | Male | Female | p-value |
|---|---|---|---|---|
| Shoulder Pain | Yes | 50 (78.1%) | 60 (75%) | 0.193 |
| | No | 14 (21.9%) | 20 (25%) | P <0.05=0.03 |
| | Total | 64 (100%) | 80 (100%) | |
| Upper Back Pain | Yes | 36 (56.3%) | 42 (52.5%) | 0.201 |
| | No | 28 (43.8%) | 38 (47.5%) | P <0.05=0.01 |
| | Total | 64 (100%) | 80 (100%) | |
| Hip/thigh | Yes | 61 (95.3%) | 72 (90%) | 1.422 |
| | No | 3 (4.7%) | 8 (10%) | P <0.05=0.01 |
| | Total | 64 (100%) | 80 (100%) | |
| Lower Back Pain | Yes | 51 (79.7%) | 61 (76.3%) | 0.243 |
| | No | 13 (20.3%) | 19 (23.8%) | P <0.05=0.03 |
| | Total | 64 (100%) | 80 (100%) | |
| Knee joint Pain | Yes | 42 (65.6%) | 60 (75%) | 1.513 |
| | No | 22 (34.4%) | 20 (25%) | P < 0.05=0.02 |
| | Total | 64 (100%) | 80 (100%) | |

*Statistical Significance at P=< 0.05

Table VI (c) Association between Job Experienced and Musculoskeletal Disorder            (N=144), (n=115)

| Body Regions | | 2-9 Years | 10-17 Years | 18 and above years | p-value |
|---|---|---|---|---|---|
| Shoulder PainNo Total | Yes | 53 (77.9%) | 48 (76.2%) | 9 (69.2%) | 0.462 |
| | No | 15(22.1%) | 15 (23.8%) | 4 (30.8%) | P<0.05=0.02 |
| | Total | 68 (100%) | 63 (100%) | 13 (100%) | |
| upperback pain | Yes | 35 (51.1%) | 33 (52.4%) | 10 (76.9%) | 2.992 |
| | No | 33 (48.5%) | 30 (47.6%) | 3 (23.1%) | P<0.05=0.01 |
| | Total | 68 (100%) | 63 (100%) | 13 (23.1%) | |
| lowerback pain | Yes | 53 (77.9%) | 48 (76.2%) | 11 (84.6%) | 0.445 |
| | No | 15 (22.1%) | 15 (23.8%) | 2 (15.4%) | P<0.05=0.03 |
| | Total | 68 (100%) | 63 (100%) | 13 (100%) | |
| knee joint pain | Yes | 45 (71.4%) | 50 (73.5%) | 7 (53.8%) | 2.066 |
| | No | 18 (28.6%) | 18 (26.5%) | 6 (46.2%) | P<0.05=0.02 |
| | Total | 63 (100%) | 68 (100%) | 13 (100%) | |

\* Statistical Significance at P=< 0.05

### A. Discussions

Table VI (a) data is categorized by Age and musculoskeletal disorder. It showed a statistical difference between shoulders, upper back, lower back and knee joint pain and the age factor.

Table VI (b) statically significant relationship was found between Gender and Musculoskeletal disorder. Pain was most associated 'male' teachers than the females.

Table VI (c) found associated between job experience and musculoskeletal disorders. Investigator has found that more pain was associated to the respondents of 2-9 years (77.9%) for both Shoulder and Low Back Pain.

Table VI (d) association was found more in 'Married' category respondents. Shoulder (76.1%) and low Back Pain (78.9%) was seen more than other body regions.

Table VI (e) statically difference was found between shoulder, low back pain, knee pain and number of teaching hours. Most respondents spend hours per day; the greater majority with low back pain (83.8%) and shoulder (78.4%) were complained by them.

Table VI (d) Association between Marital Status and Musculoskeletal Disorders            (N=144), (n=115)

| Body Regions | | Married | Unmarried | Divorced | p-value |
|---|---|---|---|---|---|
| Shoulder Pain | Yes | 83 (76.1%) | 26 (76.5%) | 0 (0.0%) | 0.131 |
| | No | 26 (76.5%) | 8 (23.5%) | 1 (100%) | P<0.05=0.02 |
| | Total | 109 (100%) | 34 (100%) | 1 (100%) | |
| upper back pain | Yes | 57 (52.3%) | 20 (58.8%) | 0 (0.0%) | 1.297 |
| | No | 52 (47.7%) | 14 (41.2%) | 1 (100%) | P<0.05=0.01 |
| | Total | 109 (100%) | 34 (100%) | 1 (100%) | |
| Lower back pain | Yes | 86 (78.9%) | 25 (73.5%) | 0 (100%) | 0.720 |
| | No | 23 (21.1%) | 9 (26.5%) | 1 (100%) | P<0.05=0.01 |
| | Total | 109 (100%) | 34 (100%) | 1 (100%) | |
| Knee Pain | Yes | 17 (15.6%) | 7 (20.6%) | 0 (0.0%) | 2.457 |
| | No | 92 (84.4%) | 27 (79.4%) | 1 (100%) | P<0.05=0.04 |
| | Total | 8 (7.3%) | 2 (5.9%) | 1(100%) | |

\* Statistical Significance at P=< 0.05

Table VI (e) Association between working hours and musculoskeletal disorder          (N=144), (n=115)

| Body Regions | | 6 hours | 7 hours | 8 hours | Any other | p-value |
|---|---|---|---|---|---|---|
| shoulder pain | Yes | 58(78.4%) | 30(65.2%) | 18(94.7%) | 4 (80%) | 6.928 |
| | No | 16(21.6%) | 16(34.8%) | 1 (5.3%) | 1 (20%) | P<0.05=0.04 |
| | Total | 74 (100%) | 46 (100%) | 19 (100%) | 5 (100%) | |
| upperback pain | Yes | 41(55.4%) | 28(60.9%) | 11(57.9%) | 1 (20%) | 4.343 |
| | No | 33(44.6%) | 46 (100%) | 19 (100%) | 4 (80%) | P<0.05=0.02 |
| | Total | 74 (100%) | 46 (100%) | 19 (100%) | 5 (100%) | |
| lowerback pain | Yes | 62(83.8%) | 32(69.6%) | 15(78.9%) | 3 (60%) | 4.269 |
| | No | 12(16.2%) | 14(30.4%) | 4 (21.1%) | 2 (40%) | P<0.05=0.03 |
| | Total | 74 (100%) | 32(69.6%) | 19 (100%) | 5 (100%) | |
| Knee Pain | Yes | 50(67.6%) | 33(71.7%) | 16(84.2%) | 3 (60%) | 2.330 |
| | No | 24(32.4%) | 13(28.3%) | 3 (15.8%) | 2 (40%) | P<0.05=0.04 |
| | Total | 74 (100%) | 46 (100%) | 19 (100%) | 5 (100%) | |

* Statistical Significance at P=< 0.05

## IV.CONCLUSIONS

This study revealed prevalence of 57% for upper back, Knee joint pain of 37% and shoulder pain 30% among the faculty members of colleges/department of Sardar Patel University. Since the investigator has not come across to any such type of studies so far thus she conducted on faculty members of Sardar Patel University. This study cannot be accurately compared to others, but it does add new information to the current literature.

## REFERENCES

[1]     Ahmad Z, Shafique MS, Zafar I, Hassan S, Tariq I, Malik A N. Frequency of Musculoskeletal Impairment in Different Professionals Teachers, Bankers and Medical Professional. JRCRS. 2017; 5(2):81-84.
[2]     Chan, A. H. S., Chen, K. & Chong, E. Y. L. (2010) Work Stress of Teachers from Primary and Secondary Schools in Hong Kong. Proceedings of the International MultiConference of Engineers and Computer Scientists. 3, 17-9.
[3]     Liping, Li., Pengying, Yue. & Fengying, Liu. (2012) workrelated musculoskeletal disorders among school teachers in china, prevalence and occupational factors. Injury Prevention. 18 (1), 1-246.
[4]     Modarresi, M., Tafti, A. M. F., Touri, M. K., & Aghakoochak, A. Prevalence of Musculoskeletal Disorders and Their Relationship with Some Work-Related Factors among of faculty members of Shahid Sadoughi university of medical sciences of Yazd in 2015.
[5]     Vedovato, T. G. & Monteiro, I. (2014) Health Conditions and Factors Related to the Work Ability of Teachers. Industrial health. 52 (2), 121-128.

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