CHAPTER 5

FINDINGS AND CONCLUSION

5.1 FINDINGS OF THE STUDY

The findings of the study are summarized in this chapter. The present study was carried out to find out the symptoms associated with work related musculoskeletal disorders among library professionals.

The findings of the study will be helpful to the library professionals to identify the symptoms associated with work related musculoskeletal disorders at different body regions and they can overcome by following ergonomic standards at work place with the help of the institutional head. The physical exercise and ergonomic training at work place were need of the hour.

The findings of the study were drawn for the future researcher in this field to further strengthen their study for the betterment of library professionals to overcome and to reduce the work related musculoskeletal disorders and to perform their duties more efficiently and effectively in time without absenteeism at work place. The following important findings have been drawn:-

1. The study reveals that 58.8 % of the respondents were male and 41.2 % were females.

2. From the study it was found that 59.4 % of the respondents were less than 30 years, 24.4 % 31-40 years and 16.2 % were above 41 years.
3. The findings of the study reveals that 44.6% of the respondents were less than 5 years of experience, 49.8% between 5-10 years of experience and 5.6% were above 10 years of experience.

4. The distribution of respondents based on current position were 41.6% librarian, 15.2% deputy librarian, 10.6% assistant librarian, 26.2% library assistant and 6.4% were technical assistant.

5. Majority of the respondents 38.4%, were working in the circulation section, followed by 28.4% in acquisition section, 14.2% in technical section, 13.2% in reference section, 2.8% in the periodical section and another 2.8% of the respondents were working in binding section respectively.

6. From the study it was found that majority of the respondents 48.8% were working 6 days in a week, 36.8% were 5 days and 14.4% of the respondents were working all the days in a week.

7. Majority of the respondents 54.4% were involved with the computer 6 hours in a working day, followed by 32.4% were 7 hours and 13.2% of the respondents were engaged with the computer for 5 hours in a day.

8. Regarding the general health status of the respondents female respondents have scored higher mean value (127.94) compared to male respondents (119.20). Hence, female respondents have the high level of general health status compared to male respondents.

9. Respondents with less than 5 years of experience have scored higher mean value (128.10), followed by 5 to 10 years (120.29) and above 10 years have scored the mean value of 103. Hence respondents with less than 5 years of experience were found to
have better level of general health status compared to other groups.

10. Respondents working in the technical section have scored higher mean value (127.37) compared to those who were working in other sections such as reference section (114.69), acquisition section (112.95), binding section (105.00), circulation section (104.21) and periodical section (97.00). This indicates that those who were working in technical section had high level of general health status compared to other sections.

11. It was found that those who have worked for less than 8 hours have scored higher mean value indicating that they have better general health status compared to the respondents in other groups, 8 to 10 hours and above 10 hours.

12. Respondents who worked for 6 days have scored higher mean value (128.55) compared to those who were in other groups, 7 days have scored (123.38) and 5 days have scored (114.97), which indicates that those who worked for 6 days in a week had better health status.

13. The study reveals that 48.4% of the respondents had neck pain in the last twelve months, 51.6% had no pain. The respondents who had pain were enquired whether the pain in the neck had prevented them to do the normal work. In this case 198 respondents (81.82%) out of 242 reported that their normal work was affected because of the pain in the neck.

14. It was found from the study that 52.4% of the respondents had shoulder pain in the last twelve months. 47.6% had no pain. Respondents who had pain were enquired whether the pain had prevented them to do the normal work. In this case 195
respondents out of 262 ie.74.43% reported that their normal work was affected, because of the trouble in the shoulder.

15. The study reveals that 44.8% of the respondents had elbow (s) pain in the last twelve months and 55.2% had no pain. Respondents who had pain were enquired whether the pain in the elbow(s) had prevented them to do the normal work. 189 respondents out of 224 ie. 84.38% reported that their normal work was affected, because of the trouble in the elbow(s).

16. 56.8% of the respondents had wrists/hand pain in the last twelve months. 43.2% had no pain. Respondents who had pain in the wrists/hand were asked whether the pain had prevented them to do the normal work. 228 respondents out of 284 (80.28%) reported that their normal work was affected, because of the trouble in the wrists/hand.

17. 45.0% of the respondents had upper back pain in the last twelve months and 55.0% had no pain. Respondents who had pain were further enquired; whether the pain in the upper back had prevented them to do the normal work. 184 out of 225 (81.78%) reported that their normal work was affected, because of the trouble in the upper back.

18. 46.4% of the respondents reported that they had low back pain during the last twelve months and 53.6% reported that they had no pain. Respondents who had pain were enquired whether low back pain prevented them to do the normal work. 211 out of 232 (90.95%) reported that their normal work was affected, because of the trouble in the low back.
19. 52.8% of the respondents reported that they had one or both thighs/hips pain in the last twelve months and 47.2% had no pain in the last twelve months. Respondents who had pain were enquired whether one or both thighs/hips pain had prevented them to do the normal work. 231 out of 264 i.e. 87.5% reported that their normal work was affected, because of the trouble in the one or both thighs/hips.

20. 44.8% of the respondents had one or both knee pain during the last twelve months. 55.2% had no pain. Respondents who had pain were enquired whether one or both knee pains had prevented them to do the normal work. In this case 199 respondents (88.84%) out of 224 reported that their normal work was affected, because of the trouble in the one or both knees.

21. 47.8% of the respondents reported that they had one or both ankle/feet pain in the last twelve months, 52.2% had no pain. When enquired from the respondents who had pain, whether the pain had prevented them to do the normal work, 207 respondents out of 239 (86.61%) reported that their normal work was affected, because of the trouble in the one or both ankle/feet.

22. With regard to the severity of work related musculoskeletal disorder complaints among the respondents, 48.4% of the respondents had mild pain during the last 12 months, 41.6% had moderate pain and 10% had severe pain in the last 12 months.

23. With regard to the longest period of musculoskeletal complaint among the respondents in the last one year, 28% of the respondents could not perform daily activity, 16.8% 1-7 days,
22.8% 8-30 days, 21.2% above 30 days but not every day and the remaining 11.2% do not have the problem at all over the last 12 months.

24. 68.4% of the respondents were referred to the physician for upper extremity pain and 31.6 % reported that they were not referred to any physician for the last one year.

25. 64.2% of the respondents were referred to the physician for lower extremity pain while 35.8 % of the respondents did not consult any physician.

26. Majority of the respondents (49.2%) had taken treatment from general practitioner, followed by 32.2% from occupational health department and the rest 18.6% of the respondents had taken treatment from other health professionals.

27. 69.8% of the respondents were absent to work due to the upper and lower extremity complaints. 30.2% of the respondents did not take any leave and absented to work.

28. It was found that 78.4% of the respondents had upper and lower extremity complaints during the last one year and their activities were hindered 21.6% of the respondents revealed that their activities were not hindered due to the upper and lower extremity complaints

29. 26.8% of the respondents had the symptoms of continuous pain in the neck region, 26.8% had pain always, 13.6% had pain in most of the times, 6.8% had pain often in the neck region, another 6.8% of the respondents had pain some times in the neck region and 46% of the respondents do not have pain in the neck region.
With regard to the symptoms of continuous pain among the respondents in the shoulder, 39.4% of the respondents do not have pain in the shoulder, 25.8% of the respondents had pain always in the shoulder, 14.6% of the respondents had pain sometimes, 10.6% of the respondents had most of the times had pain in the shoulder and 9.6% of the respondents had pain often in the neck region.

With regard to the symptoms of continuous pain among the respondents in the elbow 45.8% of the respondents do not have pain in the elbow, 20.2% of the respondents had pain always, 12% of the respondents had pain sometimes in the elbow, 11.2% had pain often in the elbow and 10.8% of the had pain most of the times in the elbow.

With regard to the symptoms of continuous pain among the respondents in the wrist (s) / hand(s) 44.8% of the respondents do not have pain in the wrist (s) / hand(s), 23% of the respondents had pain always in the wrist (s) / hand(s), 13% of the respondents had pain sometimes in the wrist (s) / hand(s), 12.2% of the respondents had pain most of the times in the wrist (s) / hand(s) and 7% had pain often in the wrist (s) / hand(s).

With regard to the symptoms of continuous pain among the respondents in the upper back, 50% of the respondents do not have pain in the upper back, 23.2% had always pain in the upper back, 10.8% of the had pain most of the times in the upper back, 8.2% of the respondents had often pain in the upper back and 7.8% of the respondents had never pain in the upper back region.
With regard to the symptoms of continuous pain among the respondents in the lower back, 44.4% of the respondents do not have pain in the lower back, 23.2% of the respondents had pain always in the lower back, 13.2% of the respondents had pain sometimes, 12.2% of the respondents had pain most of the times in the lower back and the 7% of the respondents had often pain in the lower back.

With regard to the symptoms of continuous pain among the respondents in the hip(s)/thigh(s), 46.8% of the respondents do not have pain, 28.6% had pain always in the hip(s)/thigh(s), 10.8% had pain in most of the times, 7% had pain often in the hip(s)/thigh(s) and 6.8% had pain sometimes in the hip(s)/thigh(s).

With regard to the symptoms of continuous pain among the respondents in the knee(s), 41.6% of the respondents do not have pain in the knee(s), 24.4% of the respondents had always pain, 12% of the respondents had pain sometimes, 11.2% of the respondents had pain often in the knee(s) and 10.8% of the respondents reported they had pain most of the times in the knee(s).

With regard to the symptoms of continuous pain among the respondents in the ankle(s) / feet, 48.4% of the respondents do not have pain in the ankle(s) / feet, 28.6% had pain always in the ankle(s) / feet, 10.8% of had pain sometimes in the ankle(s) / feet, 7% had pain often in the ankle(s) / feet and 5.2% of the respondents had pain most of the times in the ankle(s) / feet.
38. 23% of the respondents had always pain in the neck, 47.6% had never pain, 11.8% of the respondents sometimes had pain in the neck, 9.4% of the respondents had pain in often and 8.2% of the respondents had pain in most of the times in the neck.

39. 20.4% of the respondents had always pain in the shoulder, 39.2% do not have pain, 17.4% sometimes had pain, 13.8% had pain often in the shoulder and 9.2% of the respondents had pain in most of the times.

40. 22.8% of the respondents had always pain in the elbow, 38.0% do not have pain, 13.8% had pain often in the elbow, 13.0% had pain in the elbow sometimes and 12.4% of the respondents had pain in the elbow most of the times.

41. 80% of the respondents had pain often in the wrist, 39.2% had never pain, 24.4% always had pain, 16% of the respondents sometimes had pain and 13.6% of the respondents had pain most of the times in the wrist.

42. 25.8% of the respondents had always pain in the upper back, 14.4% sometimes had pain, 10.8% most of the times had pain, 39.4% never had pain in the upper back and 9.6% of the respondents had pain often in the upper back.

43. 25.8% of the respondents had pain always in the lower back, 43.2% never had pain, 13.4% sometimes had pain in the lower back, 9.4% most of the times had pain in the lower back and 8.2% of the respondents often had pain in the lower back.
44. 24.2% of the respondents always had pain in the hip/thigh, 35.2% never had pain in the hip/thigh, 17.2% sometimes had pain in the hip/thigh, 12.4% often had pain in the hip/thigh and 11% of the respondents most of the times had pain in the hip/thigh.

45. 23.2% of the respondents always had pain in the knee(s), 43.2% never had pain in the knee(s), 13.4% most of the times had pain in the knee(s), another 13.4% sometimes had pain in the knee(s) and 6.8% of the respondents often had pain in the knee(s).

46. 27.0% of the respondents always had pain in the ankle(s)/feet, 40.8% never had pain, 17.2% sometimes had pain in the ankle(s)/feet, 9.6% most of the times had pain in the ankle(s)/feet and 5.4% of the respondents had pain often in the ankle(s)/feet.

47. 21.8% of the respondents always had the symptoms of numbness in the neck, 48.8% do not have the symptoms, 10.8% sometimes had the symptoms of numbness in the neck, 10.6% most of the times had the symptoms of numbness and 8% of the respondents had the symptoms of numbness often in the neck.

48. 24.2% of the respondents had the symptoms of numbness always in the shoulder, 40.8% of the respondents do not have symptoms, 12.4% most of the times had the symptoms, 12% sometimes had the symptoms and 10.6% of the respondents had the symptoms of numbness often in the shoulder.
49. With regard to the symptoms of numbness in the elbow(s) 23% of the respondents always had the symptoms of numbness, 42% do not have the symptoms of numbness, 13.6% most of the times had the symptoms of numbness in the elbow(s), 10.8% of the respondents sometimes had the symptoms of numbness and 10.6% of the respondents had the symptoms of numbness often in the elbow(s).

50. With regard to the numbness in the wrist(s) 24.4% had symptoms of numbness always in the wrist(s), 36.6% never had the symptoms, 13.6% of the respondents most of the times had the symptoms of numbness in the wrist(s), 13.4% sometimes had the symptoms and 12% of the respondents had the symptoms of numbness often in the elbow(s).

51. With regard to the symptoms of numbness in the upper back 43.4% of the respondents do not have the symptoms of numbness, 28.4 % of the respondents always had the symptoms of numbness, 12.4% most of the times had the symptoms of numbness, 8% sometimes had the symptoms and 7.8% of the respondents had the symptoms of numbness often in the upper back.

52. With regard to the symptoms of numbness in the lower back 28.6% always had the symptoms, 14.8% sometimes had the symptoms, 35.2% of the respondents do not have symptoms, 12.2% most of the times had the symptoms and 9.2% of the respondents had the symptoms of numbness often in the lower back.

53. With regard to the symptoms of numbness in the hip(s)/thigh(s) 20.2% of the respondents always had the symptoms, 42% of the respondents do not have the symptoms, 16.4% most of the times
had the symptoms of numbness, 3.4% had symptoms of numbness often in the hip(s)/thigh(s) and 8% sometimes had symptoms of numbness in the hip(s)/thigh(s).

54. With regard to the symptoms of numbness in the knee(s) 38% of the respondents do not have the symptoms of numbness in the knee(s), while 21.6% always had the symptoms, 14.8% of the respondents had symptoms of numbness often in the knee(s), 13.4% of the respondents sometimes had the symptoms and 12.2% of the respondents most of the times had the symptoms of numbness in the knee(s).

55. With regard to the symptoms of numbness in the ankle(s)/feet 48.8% of the respondents do not have the symptoms, 18.8% had the symptoms of numbness always in the ankle(s)/feet, 13.4% had the symptoms of numbness often in the ankle(s)/feet, 10.8% most of the times had the symptoms of numbness in the ankle(s)/feet and 8.2% of the respondents had the symptoms of numbness sometimes in the ankle(s)/feet.

56. With regard to the symptom of tingling sensation among the respondents in the neck, 42% of the respondents reported that they do not have the symptom of tingling sensation in the neck, 27.2% always had a symptom, 14.8% sometimes had symptom, 8% most of the times had the symptom and another 8% of the respondents had the symptom of tingling sensation often in the neck.
With regard to the symptom of tingling sensation in the shoulder among the respondents, 45.8% do not have symptom, 24.6% had the symptom of tingling sensation always in the shoulder, 11% had the symptom of tingling sensation sometimes in the shoulder, 10.6% most of the times had the symptom of tingling sensation in the shoulder and 8% of the respondents reported that they had the symptom of tingling sensation often in the shoulder.

With regard to the symptom of tingling sensation among the respondents, in elbow(s), 43.4% do not have the symptom, 27.2% always had the symptom of tingling sensation in the elbow(s), 13.6% had the symptom of tingling sensation often in the elbow(s), 9.2% sometimes had the symptom of tingling sensation in the elbow(s) and 6.6% of the respondents most of the times had the symptom of tingling sensation in the elbow(s).

With regard to the symptom of tingling sensation among the respondents, in the body part wrist(s), 47.4% do not have the symptom of tingling sensation in the wrist(s), 25.8% always had the symptom of tingling sensation in the wrist(s), 12.2% most of the times had the symptom of tingling sensation in the wrist(s), 8% had the symptom of tingling sensation always in the wrist(s) and 6.6% of the respondents had the symptom of tingling sensation often in the wrist(s).

With regard to the symptom of tingling sensation among the respondents in the upper back, 40.6% do not have the symptoms of tingling sensation in the upper back, 26% always had the symptom, 14.8% sometimes had the symptom of tingling sensation in the upper back, 9.4% had the symptoms of tingling
sensation often in the upper back, 9.2% had the symptom of tingling sensation most of the times in the upper back.

61. 44.6% do not have the symptoms of tingling sensation in the lower back, 24.4% always had the symptom of tingling sensation in the lower back, 10.8% had the symptom of tingling sensation in most of the times in the lower back, 10.6% had the symptom of tingling sensation often in the lower back and 9.6% of the respondents had the symptom of tingling sensation sometimes in the lower back.

62. 35% of the respondents do not have the symptom of tingling sensation in the hip(s) / thigh(s), 24.6% had the symptom of tingling sensation always in the hip(s) / thigh(s), 16.2% had the symptom of tingling sensation sometimes in the hip(s) / thigh(s), 15% had the symptom of tingling sensation often in the hip(s) / thigh(s) and 9.2% of the respondents had the symptom of tingling sensation most of the times in the hip(s) / thigh(s).

63. 47.2% of the respondents never had a symptom of tingling sensation in the knee(s), 23% had a symptom of tingling sensation always in the knee(s), 15% most of the times had the symptom of tingling sensation in the knee(s), 8% had the symptom of tingling sensation often in the knee(s) and 6.8% of the respondents sometimes had the symptom of tingling sensation in the knee(s).

64. With regard to the symptom of tingling sensation among the respondents, in the ankle(s) / feet, 42% do not have the symptom of tingling sensation in the ankle(s) / feet, 23.2% had the symptom of tingling sensation always in the ankle(s)/feet, 13.6% had the symptom of tingling sensation sometimes in the ankle(s) / feet, 10.6% had the symptom of tingling sensation
most of the times in the ankle(s) / feet and another 10.6% of the respondents had the symptom of tingling sensation in the ankle(s) / feet.

65. With regard to the symptom of swelling/stiffness among the respondents in the neck, 47.4% do not have the symptom of swelling/stiffness in the neck, 25.8% had always had a symptom of swelling/stiffness in the neck, 11.8% had the symptom of swelling/stiffness in the neck in most of the times, 10.8% had the symptom of swelling/stiffness sometimes in the neck and 4.2% of the respondents had the symptom of swelling/stiffness often in the neck.

66. 40.4% do not have the symptom of swelling/stiffness in the shoulder(s), 23.2% had the symptom of swelling/stiffness always in the shoulder(s), 15.8% had the symptom of swelling/stiffness most of the times in the shoulder(s), 15% had the symptom of swelling/stiffness sometimes in the shoulder(s) and 5.6% of the respondents had the symptom of swelling/stiffness often in the shoulder(s).

67. 41.8% of the respondents do not have the symptom of swelling/stiffness in the elbow(s), 27.2% had the symptom of swelling/stiffness always in the elbow(s), 11.8% had the symptom of swelling/stiffness most of the times in the elbow(s), 11% had a symptom of swelling/stiffness often in the elbow(s) and 8.2% of the respondents had the symptom of swelling/stiffness sometimes in the elbow(s).

68. 31.4% of the respondents do not have the symptom of swelling/stiffness in the wrist(s), 26% had the symptom of swelling/stiffness always in the wrist(s), 19.8% had sometimes had the symptom of swelling/stiffness in the wrist(s), 14.4% had
the symptom of swelling/stiffness in the wrist(s) in most of the times, 8.4% of the respondents had the symptom of swelling/stiffness often in the wrist(s).

69. 36.8% of the respondents reported that they do not have the symptom of swelling/stiffness in the upper back, 30.4% had the symptom of swelling/stiffness always in the upper back, 18.6% had the symptom of swelling/stiffness sometimes in the upper back, 10% had the symptom of swelling/stiffness most of the times in the upper back and 4.2% of the respondents had the symptom of swelling/stiffness often in the upper back.

70. 34.4% of the respondents do not have the symptom of swelling/stiffness in the lower back, 27.4% had the symptom of swelling/stiffness always in the lower back, 17% had the symptom of swelling/stiffness sometimes in the lower back, 13.2% had the symptom of swelling/stiffness most of the times in the lower back and 8% of the respondents had the symptom of swelling/stiffness often in the lower back.

71. 31.6% of the respondents reported that they do not have the symptom of swelling/stiffness in the hip(s) / thigh(s), 21.8% had the symptom of swelling/stiffness always in the hip(s) / thigh(s), 19.6 had the symptom of swelling/stiffness sometimes in the hip(s) / thigh(s), 13.8% had the symptom of swelling/stiffness often in the hip(s) / thigh(s) and 13.2% of the respondents had the symptom of swelling/stiffness most of the times in the hip(s) / thigh(s).

72. 35.2% always had the desk (table) at work with suitable height, 28.2% never had the desk (table) at work with suitable height, 15.2% sometimes had the desk (table) at work with suitable height, 15% seldom had the desk (table) at work with suitable
height and 6.4% of the respondents had often the desk (table) at work with suitable height.

73. It was found that 28.2% of the respondents arm were never supported by the table while using the mouse device, 31.6% respondents arm were supported by the table always, 16.4% of the respondents arm sometimes supported by the table, 13.2% of the respondents arm were often supported by the table and 10.6% of the respondents arm were seldom supported by the table.

74. With regard to the availability of facilities at work station among the respondents it was found that 25.2% of the respondents chair they use never supported their lower back, 35.6% of the respondents chair they use supported always their lower back, 18.8% of the respondents chair seldom supported their lower back, 11% of the respondents chair they use often supported their lower back and 9.4% of the respondents reported that their chair they use sometimes supported their lower back.

75. It was found 23% of the respondents key board never placed in front of them, 27.4% had their key board placed always in front of them, 20.2 had their key board placed sometimes in front of them, 19.2 had their key board seldom placed in front of them and 10.2 of the respondents had their key board often placed in front of them.

76. With regard to the availability of facilities at work station among the respondents 34.4% of the respondents reported that their screen always placed directly in front of them, 29.6% of the respondents reported that their screen never placed directly in front of them, 17% of the respondents reported that their
screen seldom placed directly in front of them, 10.8% of the respondents reported that their screen sometimes placed directly in front of them, 8.2% of the respondents reported that their screen often placed directly in front of them.

77. 30.6% of the respondents reported that they had never have enough space to work at work place, 31.8% of the respondents have enough space to work at work place. 17.85% have seldom have enough space to work at work place, 10.2% had often enough space to work at work place and 9.6% of the respondents had sometimes enough space to work at work place.

78. 28.8% of the respondents never kept good work posture, 30.4 always kept good work posture during work time, 18.2% sometimes kept good work posture, 16% of the respondents seldom kept good work posture and 6.6 of the respondents have often kept good work posture.

79. It was found that 20.6% of the respondents had to sit always for more than two hours per day with lifted shoulders, 30.4% of the respondents sometimes had to sit for more than two hours per day with lifted shoulders, 25% of the respondents never sit for more than two hours per day with lifted shoulders, 14.8% of the respondents seldom had to sit for more than two hours per day with lifted shoulders and 9.2% of the respondents often had to sit for more than two hours per day with lifted shoulders.

80. 21.8% of the respondents sat always in awkward posture during at work, 28.6% sometimes in awkward posture, 20.4% seldom had to sit in awkward posture, 14.6% often in awkward posture and 14.6% of the respondents never sat in awkward posture.
81. With regard to performing repetitive tasks 19.2% of the respondents always performed repetitive task, 6.8% of the respondents often performed repetitive task 38.2% of the respondents never performed repetitive task, 20% of the respondents seldom performed repetitive task and 15.8% of the respondents sometimes performed repetitive task.

82. It was found that 14.8% of the respondents always felt computer screen reflects the office lights, 11.8% of the respondents felt that computer screen often reflects the office lights, 24.2% of the respondents felt that computer screen sometimes reflects the office lights, 23% of the respondents seldom felt that computer screen reflects the office lights and 26.2% of the respondents felt that computer screen never reflects the office lights.

83. It was found that 12.2% of the respondents always frequently bent and twisted while at work, 13.2% often bent and twisted while at work, whereas 24.6% sometimes bent and twisted during at work and 22.2% seldom bent frequently and twisted while at work, 27.8% of the respondents never bent frequently and twisted at work.

84. It was found that 7% of the respondents often faced with heavy physical workload during at work hours and 32.8% sometimes faced with heavy physical workload, 14.4% seldom reported that they faced with heavy physical workload, while 32.4% of the respondents never faced with heavy physical workload during work hours.

85. 24.8% of the respondents always had the habit of repetitive movements while at work and 7.8% often do the habit of repetitive movements in the work station, 17.2% sometimes had
the habit of repetition in their movements, 13.2% seldom had the repetitive movements at work hours and the rest and 37.2% of the respondents that they are comfortable at work place and never had the repetitive movements while at work hours.

86. The study results shows that 16.4% of the respondents had the psychosocial distress always in work and 9.4% of the respondents had the psychosocial distress often in work, 19.8% of the respondents had the psychosocial distress sometimes in work 29.4% of the respondents seldom had the psychosocial distress in work and 25% of the respondents never had the psychosocial distress at work.

5.2 SUGGESTIONS

It was identified from the study that ergonomic principles are not followed by the management in many engineering college libraries. Ergonomic standards are essential for better performance of the Library professionals in the work station. Awareness is created among the management for the improvement of library workstation.

It was found that library professionals are working in awkward postures including prolonged reaching, twisting, bending and holding fixed positions. Awareness is created among the library professionals by trying to keep the body parts within a range of neutral positions and was encouraged to be comfortable to change positions and to stretch when working. It is suggested that foot rests reduce pressure behind the knees and reduce strain on the lower back. Padding reduces pressure points on the forearm and knees. Mechanical aids reduce force, repetition and awkward postures in transporting materials and products around the workplace.
It is suggested among the library professionals that occupational risk factors can be overcome by providing variety in jobs, adjusting work schedules and work pace, providing recovery time (i.e., muscle relaxation time), modifying work practices, ensuring regular housekeeping and maintenance of work spaces, tools and equipment and by encouraging exercises.

**THE FOLLOWING ARE THE GENERAL SUGGESTIONS FOR THE BETTER WORK ENVIRONMENT IN THE LIBRARY:**

- Chairs should be stable and fully and easily adjustable from the seated position.
- Seat pan height should be adjustable and should transfer the user's weight through the buttocks, not the thighs.
- Backrests should adjust up/down and backward/forward or flex with body movement for good lumbar support. A forward tilt of the seat pan may relieve body stress in certain applications since it allows the backrest to follow the person when performing varied tasks.
- Holding the same seated position for long periods of time causes fatigue. Individual preferences must be permitted and it is important that chairs be well designed and adjustable.
- To achieve satisfactory posture it may be necessary to adjust the work station height.
- Hand rests should be provided for intricate tasks such as fine assembly or inspection. With the weight of the arm
supported, the hand is stabilized improving hand dexterity and comfort.

- Armrests should be provided when tasks require the arm to be held away from the body. The further the arm is held away from the body, the greater the fatigue and subsequent decrease in manual control. Armrests should be padded and covered with an absorbent non-slip material.

5.3 CONCLUSIONS

From the observation and analysis of the results, it can be concluded that the library professionals are working in awkward postures, with the potential risks of musculoskeletal disorders primarily affecting the low-back and neck region. This can be attributed to the improper design of the workstation. Twisting, bending and over-reaching are the resultant of poorly designed workstation. These actions force the spine into a non-neutral position that increases the overall discomfort and pain particularly at the lower back, neck and shoulders, which indicate that the library professionals are/may be affected by work-related upper body musculoskeletal disorders. Moreover, they have to work for a prolong period of time remaining in such constrained and awkward postures, which further amplifies their discomfort feeling. The working environment also affects them to a great extent. Lack of proper illumination at work site exerts an additional adverse effect on the eyes. Thus this study indicates the appalling condition of the library professionals.

To overcome such problem, the existing posture can be eliminated by ergonomically modified work desk. This modification may increase the safety of the workers at the work. Recommendations like changing the
work height by using a proper work desk was provided to improve work condition by avoiding the forward bending posture. Also to improve the workstation design the library professionals should be provided proper illumination to their work site, which can reduce the visual discomfort to some extent. Finally, since prolonged sitting in cross leg posture is clearly an additional risk factor affecting the musculoskeletal system in this setting, library professionals should be strongly suggested to take rest pauses during work period.

There is a high prevalence of musculoskeletal symptoms in the group of library professionals who reported symptoms mainly affecting the lower back, shoulders and neck and wrist/hand areas. Symptoms were found to be associated with age and lengths of service, occupational subgroup and general health (GHQ) score. The study results were provided to the site management team, with emphasis placed on the high prevalence of musculoskeletal symptoms. Recommendations include advice to perform more adequate and appropriate risk assessments for musculoskeletal hazards, to introduce appropriate ergonomic changes to the workplace, to reduce overhead work and to consider job rotation and employment of adequate library staff members in all the sections of the library to ease the library processes.

Prevention must aim at eliminating the repetitiveness of the work by proper job design. Where this is not possible, preventive strategies such as good workplace layout, tool and equipment design and proper work practices should be considered. Early recognition of these disorders is very important because medical treatments are unlikely to be effective once these injuries become longstanding.
Preventive and control measures, in order to be truly effective, require significant involvement on the part of the workers, their representatives and management to improve occupational health and safety.

5.4 SCOPE FOR FURTHER RESEARCH

The study is based on the professionals who were working in Engineering Colleges affiliated to Anna University, Chennai. Public libraries, special libraries and Arts and Science College libraries were not taken into consideration. Studying of all libraries would not be possible for an individual researcher, owing to constraints of money, time energy and efforts. The scope of the study is limited to the identification of the symptoms for musculoskeletal disorders among professionals who were engaged in repetitive tasks and its aim is to bring awareness about musculoskeletal disorders among the library professionals and to minimize the occupational risk factors. The study can be extended to all types of libraries.