ISSN: 0976-3031

Available Online at http://www.recentscientific.com

CODEN: IJRSFP (USA)

International Journal of Recent Scientific Research
Vol. 8, Issue, 12, pp. 22838-22841, December, 2017

International Journal of Recent Scientific Research

DOI: 10.24327/IJRSR

Research Article

ASSESSING THE KNOWLEDGE AND PRACTICE OF PHYSICAL ERGONOMICS AMONG THE UNDERGRADUATES OF FACULTY OF ALLIED HEALTH SCIENCES, UNIVERSITY OF PERADENIYA

***Dasanayaka, DARK., Malwanage, VMBKT., Senarath, MKID and Liyanage EI**

Department of Physiotherapy, Faculty of Allied Health Sciences,
University of Peradeniya, Sri Lanka

DOI: http://dx.doi.org/10.24327/ijrsr.2017.0812.1346

ARTICLE INFO

Article History:

Received 16th September, 2017
Received in revised form 25th October, 2017
Accepted 23rd November, 2017
Published online 28th December, 2017

Key Words:

Physical ergonomics, knowledge, practice, work-related musculoskeletal problems

ABSTRACT

Physical ergonomics implies the changes of human physiology, anatomy, biomechanics and body measurements with the physical activities. Knowledge and practice of physical ergonomics improves the quality of life through reducing work-related musculoskeletal problems and enhancing the productivity.130 undergraduates of Faculty of Allied Health Sciences, University of Peradeniya were selected as the study sample to assess the knowledge and practice of physical ergonomics and to assess the relationships between physical ergonomics and study area, academic year, and gender,. Results showed weak correlations between knowledge and practice of ergonomics to the study area, academic year and gender. Although most of the undergraduates have a considerable level of knowledge on ergonomics, they have moderately lower level of practice of ergonomics. Reasons for the poor practice were lack of ergonomically designed devices, furniture and other equipment and destitute awareness of the musculoskeletal complications that would result in unsatisfactory practice of ergonomics during activities of daily living.

INTRODUCTION

Ergonomics compromise of three main fields in research; they are physical, cognitive and organizational. Physical ergonomics consider the changes of human physiology, anatomy and biomechanics as well as body measurements with the physical activities. Principles of ergonomics mainly used in designing of industrial products. So, physical ergonomics is widely discussed in medical fields related to health conditions such as mechanical pain and poor body alignments, arthritis and carpal tunnel syndrome. Ergonomically designed products are advised to use as a preventive measure from such conditions.

Disorders related to musculoskeletal system are the most common type of work-related injuries. As a result of Work-related musculoskeletal disorders (WRMDs), individuals are suffering from continuous pain, loss of functions and poor task performance which is difficulty in diagnosing at early stages due to less complains of symptoms (Dabholkar, 2014). Nearly 600,000 of workers have to windup their jobs due to serious WRMDs out of 1.8 US workers early (Jeffress, 2000). According to the National Institute for Occupational Safety and Health (NIOSH), most of the workers complain localized pain and discomfort over night after engage with certain occupations which are involved with heavy, forceful, repetitive and vibratory activities. The Occupational Safety and Health Administration (OSHA) have scientifically reviewed closed relationship between ergonomics and improvement of WRMDs and similarly enhancement of productivity.

A study conducted by El-Sallamy *et al* in 2017 to assess the knowledge, attitude, and practice towards ergonomics among undergraduates of Faculty of Dentistry, Tanta University, Egypt concluded that95.4% of undergraduates had poor practice of ergonomics although 48.9% of undergraduates had fair knowledge on ergonomics.

Studies have proven that a common risk factor for musculoskeletal pain is poor practice of ergonomics. In the general population it is very important to maintain proper posture during activities of daily living and make modifications in the surrounding environment in order to reduce faulty mechanisms and musculoskeletal pain which are related to poor ergonomics.

As health care professionals, it is essential to have an adequate knowledge of physical ergonomics when dealing with patients with the intention of providing proper advice as well as to practice proper ergonomics in their day today work life.

Corresponding author:* **Dasanayaka, DARK
Department of Physiotherapy, Faculty of Allied Health Sciences, University of Peradeniya, Sri Lanka

There is lack of information regarding the knowledge and practice of ergonomics in the society. Although there are many resources which are available to provide the details of ergonomics and its importance, there are no any standard methods to assess its practice in the society, because it has been a finding in most research studies that the lack of knowledge and ignorance of physical ergonomics leads to musculoskeletal pain, discomfort, deformities and disabilities in general population. Therefore this study was aimed to assess the knowledge and practice of physical ergonomics among the undergraduates of Faculty of Allied Health Sciences, University of Peradeniya. Furthermore, this study was intended to find the relationship between knowledge and practice of physical ergonomics and the department of study, the academic year, and gender among them.

MATERIALS AND METHODS

There were 644 registered undergraduates in the Faculty of Allied Health Sciences in the batches 2011/2012, 2012/2013, 2013/2014 and 2014/2015. Twenty percent (130) of that number was taken as the sample of the study and they were selected by Random Sampling Generation. Sample size for each academic year and the relevant departments were allocated by using proportional allocation of stratified random sampling technique. Then they were divided in to gender basis.

A questionnaire which was designed to assess the knowledge and practice of physical ergonomics were distributed among the participants after recruiting the sample for the study. Obtained data was analyzed using SPSS software (version 16).

RESULTS AND DISCUSSION

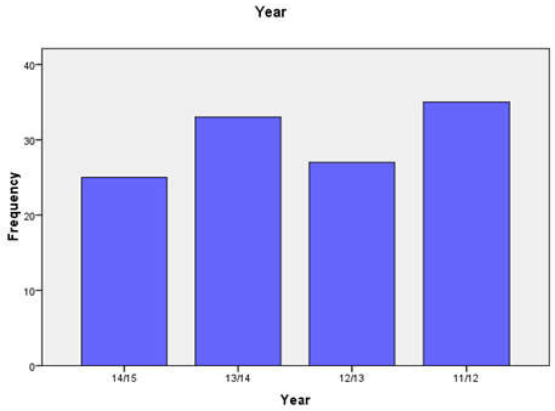

Figure 1 Frequency table of participantsaccording to theacademic year

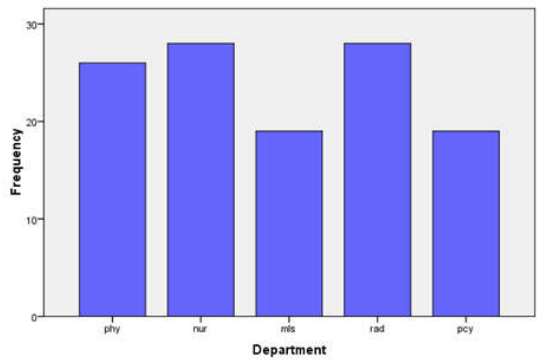

Figure 2 Frequency table of participants according to the department

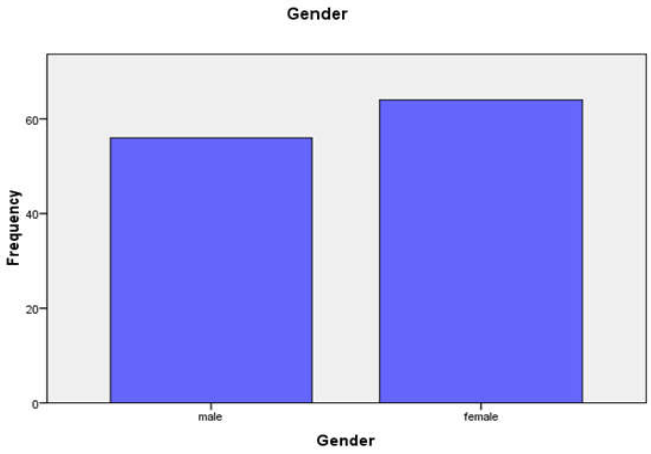

Figure 3 Frequency table of participants according to the gender

Figure 1, 2 and 3 show categorization of study participants according to their study year, relevant department and gender respectively. Number of study participants is different with the year of study, department and gender due to variation in the sample of the study. This variation is inconsiderable with regard to sample size and also, the participants are similar while performing the analysis to compare the knowledge and practice of ergonomics according to their study year, department and the gender.

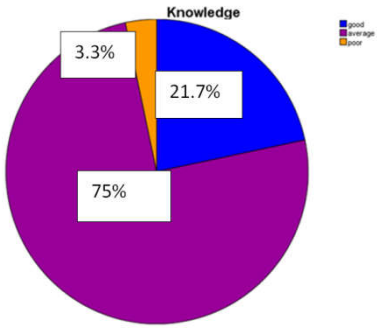

Figure 4 Knowledge about ergonomics among participants

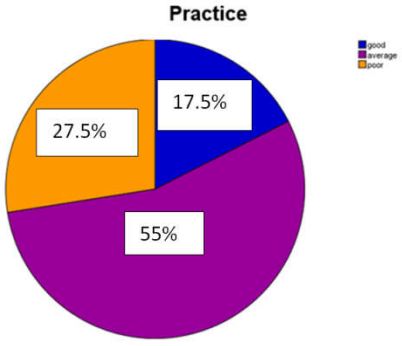

Figure 5 Practice of ergonomicsamong participants

According to the figure 4 and 5, most of the undergraduates (75%) had an average knowledge on ergonomics and only a few undergraduates (3.3%) had poor knowledge. Although, more than 95% of undergraduates have considerable knowledge about ergonomics, only 17.5% is practicing proper ergonomics during activities of daily living and 27.5% of undergraduates have accepted that they are having poor practice of ergonomics.

Table 1 Correlation values of knowledge and practice among study year, department and gender

Variables	Pearson Chi-Square value	P- Value	Cramer's V value
Knowledge ~ Year	12.930	.044*	.232
Knowledge ~ Department	29.131	.000*	.348
Knowledge ~ Gender	1.132	.568	.097
Practice ~ Year	5.973	.426	.158
Practice ~ Department	15.788	.046*	.256
Practice ~ Gender	3.578	.167	.173
Knowledge ~ Practice	2.457	.652	.101

*Significant at 5% Significance Level

According to the Pearson Chi-Square values and P-Values, there is significant dependency ($P<0.05$) of knowledge on ergonomics to study year and to the department and significant dependency ($P<0.05$) of practice of ergonomics to the department. According to Cramer's V value, there is a weak correlation between knowledge on ergonomics and study year, department and gender respectively. Weak correlation between practice of ergonomics and study year, department and gender also evident (Table 1).

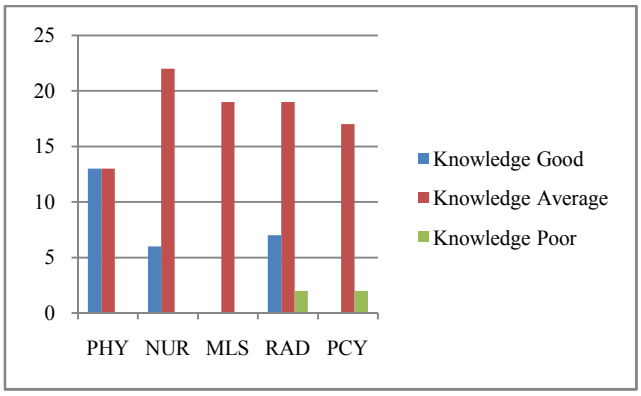

Figure 6 Distribution of knowledge on ergonomics according to the department.

Although there is a weak correlation between knowledge on ergonomics and relevant departments, figure 6 illustrates that almost all undergraduates in physiotherapy department have an average to good knowledge of ergonomics, while other undergraduates have average knowledge on ergonomics. Few undergraduates from the department of Radiography/Radiotherapy and Pharmacy show poor knowledge on ergonomics.

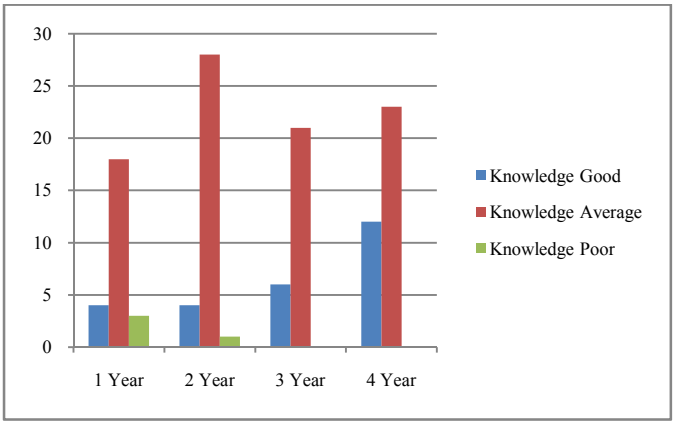

Figure 7 Distribution of knowledge on ergonomics according to the study year.

According to figure 7, level of good knowledge has increased with the study year though there is weak correlation among knowledge and study year.

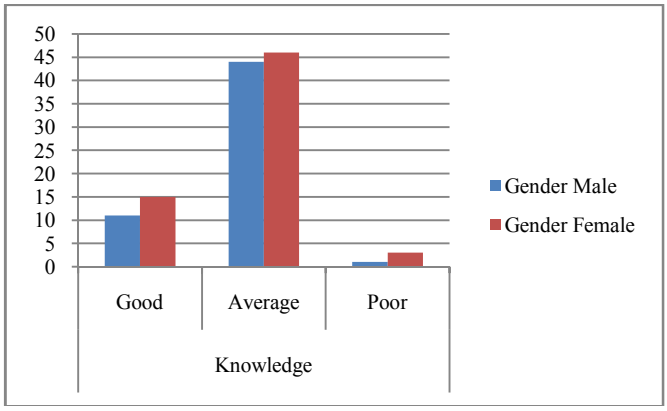

Figure 8 Distribution of knowledge of ergonomics according to gender.

There is no significant difference of knowledge on ergonomic sbased on gender among the study participants (Figure 8).

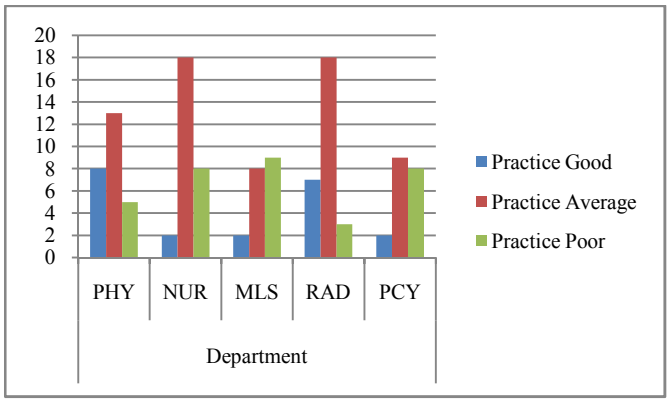

Figure 9 Distribution of practice of ergonomics according to the department.

Proper practice of ergonomics is higher in physiotherapy undergraduates (31%) when compared to the undergraduates of other departments and considerable amount of undergraduates in each department, having poor practice of ergonomics (Figure 9).

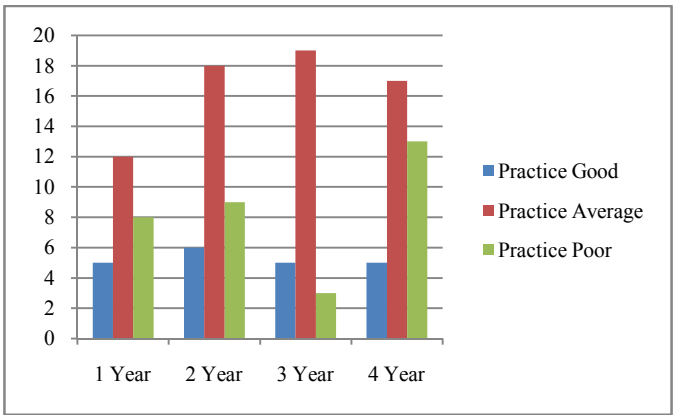

Figure 10 Distribution of practice of ergonomics according to the study year

There is no difference in practice of ergonomics when comparing the participants of different academic years. Undergraduates across all academic years have average level of practice of ergonomics (Figure 10).

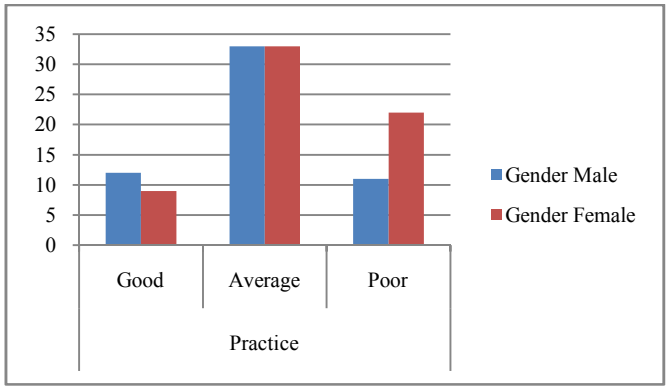

Figure 11 Distribution of practice of ergonomics according to the gender.

Similar to the knowledge of ergonomics, practice of ergonomics also does not show any correlation with the gender of study participants (Figure 11).

DISCUSSION

Though there are weak correlations of knowledge and practice of ergonomics to the study year, department, and gender most of the participants have a considerable level of knowledge on ergonomics and moderately lower level of practice of ergonomics. Among them physiotherapy undergraduates have the higher level of good knowledge and knowledge of all the participants has increased with their study year.

Most of the undergraduates do not engage in their day today life activities in ergonomically correct ways due to lack of time and they are not concerned about the negative outcome of practicing incorrect postures although they have sufficient knowledge of ergonomics. Furthermore, lack of ergonomically designed devices, furniture and other equipment in the faculty, clinical setup and hostels are another reason which leads to poor practice in physical ergonomics.

CONCLUSION

Albeit undergraduates are having fairly good knowledge on ergonomics, they have markedly lesser practice in it. Since they are going to be health care professionals in near future, they should have a better knowledge and practice of ergonomics as it requires to consider those facts during their own carrier as well as to instruct the patients regarding them, with the intention of delivering a tremendous service while spending a healthier life.

In conclusion, the findings of this research work will be aspired to conduct awareness programs on physical ergonomics while emphasizing its effectiveness and raise the usage of ergonomically designed aids to carry out activities of daily living more efficiently.

References

Bedi, H.S., Moon, N.J., Bhatia, V., Sidhu, G.K., and Khan, N. (2015). Evaluation of Musculoskeletal Disorders in Dentists and Application of DMAIC Technique to Improve the Ergonomics at Dental Clinics and Meta-Analysis of Literature. *Journal of Clinical and Diagnostic Research.* 9(6), 1-3.

Cervera-Espert, J., Pascual-Moscardó, A., and Camps-Alemany, I. (2017). Wrong postural hygiene and ergonomics in dental undergraduates of the University of Valencia (Spain) (part I).

Dabholkar, T.A., Nakhawa, P., and Yardi, S. (2014). Common musculoskeletal problem experienced by fishing industry workers. *Indian Journal of Occupational and Enviornmental Medicine.* 18(2), 48–51.

Dula, J., Bruderb, R., Bucklec, P., Carayond, P., Falzone, P., Marrasf, W.S., Wilsong, J.R., and Doelenh, B.(2012). A strategy for human factors/ergonomics: developing the discipline and profession. *Ergonomics*, 55(4), 377-395.

El-Sallamy, R.M., Atlam, S.A., Kabbash, I., El-Fatah, S.A., and El-Flaky, A. (2017). Knowledge, attitude, and practice towards ergonomics among undergraduates of Faculty of Dentistry, Tanta University, Egypt. Envoirnmental Science and Pollution Research International.

Gawda,P.**,** Dmoszyńska-Graniczka,M., Pawlak,H., Cybulski,M.**,** Kiełbus,M., Majcher,P.**,** Buczaj,A. and Buczaj,M. (2015). Evaluation of influence of stretching therapy and ergonomic factors on postural control in patients with chronic non-specific low back pain. *Annals of Agricultural and Environmental Medicine*.22 (1), 142–146.

International Labour Office, in collaboration with the International Ergonomics Association.(2010). Ergonomic checkpoints: Practical and easy-to-implement solutions for improving safety, health and working conditions.2nd edition. International Labour Office. Geneva.

Introduction to Ergonomics.Occupationaln Safety and Health Training Academy. (2013). 6-51.

Khandana M., Maghsoudipoura M., Vosoughib S. and Kavousib A. (2015).Safety Climate and Prediction of Ergonomic Behavior. *International Journal of Occupational Safety and Ergonomics.* 19(4), 523-530.

Macfarlane, G.J., Thomas, E., Papageorgiou, A.C., Croft, P.R., Jayson, M.I., and Silman, A.J. (1997). Employment and physical work activities as predictors of future low back pain. *Spine*.22(10), 1143-1149.

McMillan, M., Trask C., Dosman, J., Hagel, L., and Pickett, W.(2015). Prevalence of Musculoskeletal Disorders Among Saskatchewan Farmers. *Journal of Agromedicine.* 20(3), 292-301.

Sotoyama, M., Bergqvist, U., Jonai, H. and Saito, S. (2002). An Ergonomic Questionnaire Survey on the Use of Computers in Schools. *Industrial Health.*40, 135-141.

****