

**RELATIONSHIP OF AWARENESS LEVELS ABOUT ERGONOMICS TOWARD
MUSCULOSKELETAL DISORDERS IN PROFESSIONAL STUDENTS
OF DENTAL DOCTORS**

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ABSTRACT

Background: Dental practice has risks to occupational health for the body in terms of ergonomics. Broadly speaking, ergonomics is the study of humans to create work systems that are healthier, safer, and more comfortable. Musculoskeletal disorders (MSDs) are disorders of the muscles, tendons, joints, vertebrae, peripheral nerves, and vascular system that can be caused by various factors, including occupational factors such as posture distortion, too long a static posture, and repetitive movements. **Purpose:** The purpose of this study was to determine the relationship between the level of awareness about ergonomics to Musculoskeletal Disorders (MSDs) in the dental profession students of Universitas Airlangga. **Methods:** Data were collected through online questionnaires and analyzed using the Pearson Chi-Square technique. **Results:** Out of 55 students, 100% (55) dentistry profession students were aware of the importance of ergonomics. Then 84.9% (45) students experienced symptoms of musculoskeletal abnormalities and another 15.1% (8) students did not experience musculoskeletal symptoms. Statistically, there is no significant relationship between the level of awareness about ergonomics towards Musculoskeletal Disorders (MSDs) in the dental profession students of Universitas Airlangga. **Conclusion:** The level of awareness about ergonomics is not significantly related to Musculoskeletal Disorders (MSDs) in the dental profession students of Universitas Airlangga.

Keyword: musculoskeletal disorders, awareness, ergonomics, dental practice

INTRODUCTION

When carrying out the daily profession, dentists perform treatments that require accuracy in a relatively small area of care, namely the mouth area. This results in dentists often working in odd positions for relatively long periods (Batra et al., 2015). Dentists assume that they must move toward the patient, rather than adjusting the patient's sitting position on a dental chair. This of course can pose risks to occupational health for the body in the aspect of ergonomics (Windi, 2015).

Ergonomics comes from Greek, namely Ergos and Nomos. Ergos has the meaning of work, while Nomos has a legal meaning. Understanding ergonomics in a broad outline is the study of humans to create a healthier, safer, and more comfortable work system (Siregar, Tarigan, Syahputri, & Sari, 2018). The right ergonomic design is needed to prevent repetitive strain injuries, which can develop over time and cause long-term disability (Rajvanshi, 2015; Rimba, Naiem, & Rahim, 2019; Wibowo, Berniyanti, & Sunariani, 2017).

Musculoskeletal disorders (MSDs) are disorders of the muscles, tendons, joints, vertebrae, peripheral nerves, and vascular system that can occur suddenly and acutely or slowly and chronically (Huda & Matondang, 2018; Rizkya, Syahputri, Sari, Anizar, & Siregar, 2018). This disorder is caused by various factors including work factors such as posture distortion, too long a static posture, and repetitive movements (Prayudha, Simandjuntak, & Sumarta, 2019; Sakti, Usman, Lee, Benjamin, & Maulidiah, 2019). Pain in the musculoskeletal system, especially back pain, is a health problem that often occurs in dentists. MSDs are the reason 29.5% of dentists make early retirement (Gupta., 2017).

This study aims to look at the relationship between the level of awareness of dental profession students of Universitas Airlangga on the importance of ergonomics to the symptoms of emerging musculoskeletal disorders.

MATERIALS AND METHODS

This study was an observational analytic study with a cross-sectional design to correlate the level of awareness about proper ergonomics with musculoskeletal disorders in dental profession students at Universitas Airlangga. Ethical eligibility was obtained from the Ethics Committee of the Faculty of Dental Medicine, Universitas Airlangga with certificate number

175 / HRECC.FODM / III / 2020. The ethical eligibility certificate is in the attachment section.

The sample is a dental profession student at Universitas Airlangga Oral Dental Hospital. Sampling as a research subject was carried out by a systematic random sampling method of 55 respondents.

The data was obtained through an online questionnaire on the dental education professional students of Universitas Airlangga with a total sample of 55 students chosen randomly. The respondent's personal data only uses the initials of the name to protect the confidentiality of the respondent. After the data is collected, data analysis is done using the Pearson Chi-Square method to find out the relationship between the level of awareness about ergonomics against musculoskeletal disorders in dental profession students at Universitas Airlangga.

RESULTS

The results of this study indicate that 100% (55) dentistry profession students are aware of the importance of ergonomics (Table 1). Then 84.9% (45) students experienced symptoms of musculoskeletal abnormalities and another 15.1% (8) students did not experience musculoskeletal symptoms (Table 1). As many as 45.3% (24) students claimed to take micro-breaks between the patients' work, while 54.7% (29) students did not.

Table 1. Relationship Analysis of the Level of Awareness About Ergonomics Against Musculoskeletal Disorders in the Dental Profession Students of Universitas Airlangga (n = 53).

Respondents Characteristic		Percentage	
		N	(%)
Aware of the importance of Ergonomics	Yes	53	100
	No	0	0
Experience the symptoms of musculoskeletal disorders	Yes	45	84,9
	No	8	15,1
Take a Micro Break	Yes	24	45,3
	No	29	54,7

Analysis of the relationship between the level of awareness about ergonomics against Musculoskeletal Disorders (MSDs) in the dental profession students of Universitas Airlangga has been carried out and statistically did not show significant results (Table 2).

Table 2. *Pearson* Chi-square test results

Variable	Sig.
Relationship of awareness level about ergonomics towards Musculoskeletal Disorders (MSDs)	0.190

DISCUSSION

Knowledge and attitude are the two initial domains of behavior theory before practicing information. In this study, the level of correspondence knowledge of ergonomics can be said to be the same, because ergonomics is one of the materials when the correspondent goes to college at the preclinical level. In the correspondent, survey results showed a positive attitude towards ergonomics. All correspondents answered that ergonomics is important in the practice of dentistry.

This very high level of awareness is not in line with the number of correspondents who experience symptoms of musculoskeletal disorders. This is shown by the relationship between ergonomic awareness of musculoskeletal abnormalities that are not statistically significant. This can happen because in this study it was found that not all correspondents practice ergonomics following the indicators in this study, for example only 1.8% of the correspondents used magnification tools at work. The application of ergonomics in dentistry is supported by 3 factors, namely instruments such as handpiece and dental instruments; equipment such as magnification and lighting aids; and posture at work(Das et al., 2018).

Micro rest can prevent injury to muscles and can reduce stress while working(Das et al., 2018). Also, micro-breaks and interruptions can reduce the burden received by the musculoskeletal system(Tarwaka., 2014; Windi, 2015). In this study, it was found that only 45.3% of the correspondents took micro-breaks. This shows that the majority of correspondents get a greater burden on the musculoskeletal system which can contribute to abnormalities of the musculoskeletal system (Mayasari et al., n.d.; Shaik, 2015).

CONCLUSION

The level of awareness about ergonomics is not significantly related to Musculoskeletal Disorders (MSDs) in the dental profession students of Universitas Airlangga.

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