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AWARENESS OF DENTAL ERGONOMICS AMONGST DENTAL PRACTITIONERS AND POST GRADUATES IN CHENNAI CITY- A CROSS SECTIONAL STUDY

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Abstract:

Context: Clinical eminence is a result of enhanced quality and productivity. Dentistry is a heath field which is equipment stationed, and this makes Dental Practitioners susceptible to a lot of physical and cognitive stress which might ultimately reduce the spirit of daily clinical practice markedly. Considering poor ergonomics as one of the biggest occupational hazard for dentists, a discursive understanding of equipment ergonomics becomes critical to prevent and overcome work related musculoskeletal disorders and establish clinical longevity.

Aim: The aim of the study to assess the awareness of Dental Ergonomics among Dental Practitioners and Post graduates in Chennai city.

Materials and Methods: The cross sectional survey was conducted among 208 Dental Practitioners and post graduates in Chennai city by randomly circulating the questionnaire containing 39 multiple choice questions online and through handouts. All responses from the participants were collected, recorded, tabulated and scored. The data thus obtained was interpreted.

Results: The scoring of participants following assessment of ergonomics in daily practice revealed that only 20.2% of the study population was good whereas 68.3% of the participants were fair and 11.5% poor. 64.4% feel knowledge on ergonomic principles is insufficient among dentists and 87.5% want ergonomics to be a part of the dental curriculum.

Conclusion: The awareness of dental ergonomics is seemingly low among dental practitioners, the reason behind it not being bridged with its clinical application. Theoretical and practical inclusion of basic ergonomic principles need to be initiated at an early stage before improper postural habits develop and work related musculoskeletal disorders become a concern.

Keywords: Awareness, dental ergonomics, musculoskeletal disorders, occupational hazard.

Introduction

Dental health care delivery system collaborates scientific congruity with operative skills. For effective delivery of this system, conditions that would improve its efficiency become very essential. Ergonomics is the scientific study of people and their working conditions, in order to improve effectiveness. It is an applied science concerned with designing products and procedures for maximum efficiency.[1] In Greek, “Ergo” means work and “Nomics” means natural laws or systems.[2] Considering dentistry involving hours of work on the head end of the patient, adopting a balanced functional posture by the clinician becomes highly imperative to maintain physical health.

Work related musculoskeletal disorders are becoming highly prevalent among the dental community .[3] As a result of the nature of dental work patterns that primarily involve repetitive movements in a static posture for an extended period of time, dental surgeons fall under a high risk of developing ergonomics-associated conditions. A combination of

inappropriate position, exaggerated movements and inefficient equipments aggrevates the entire scenario.[4]

Posture related musculoskeletal problems in dentistry mainly include fatigue, pain, swelling, stiffness, sensory impairment, limitations in movement of hand, neck and back. [5] Literature evidence shows the prevalence of discomfort in back, neck, shoulders and hands among 63% to 93% of the dentists.[6] Such symptoms are generally slow to appear and are often neglected until they become chronic and evident.[7] Further, work related tension and stress can cumulate to the postural strain. Ultimately, work abstinence has been one major outcome. [8]

Studies in literature reveal that only 32% of affected dentists seek medical help for postural problems. [9] This gives a magnified image of negligence in such critical conditions. Even with a paradigm shift from manual instruments to mechanical equipments, practitioners are known to choose instruments by familiarity rather than development in design characteristics and other ergonomic modernizations.[10] Thus, a comprehensive understanding of equipment ergonomics becomes very important. Considering ergonomic problems as one of the biggest occupational hazard for practicing dentists, the current study was designed. The aim of the present study was to assess the awareness of Dental Ergonomics among Dental Practitioners and Post graduates in Chennai city.

Materials and Methods

The study was designed as a cross sectional survey to assess the attitude and practice of dental ergonomics among Dental Post Graduates and Practitioners across the Chennai city. Ethical approval was obtained from the Institutional Review Board at Sri Venkateswara Dental College and Hospital, Chennai. The study was conducted from July 2019 to August 2019.

An online questionnaire consisting of 39 closed ended questions was framed in a standard manner. The first section of the questionnaire had provision for the participants to fill in their demographic details which included age, gender, work experience and field of expertise of the participants. This was followed by four sections containing a total of 32 questions developed to assess the attitude and practice of dental ergonomics in daily clinical practice. Validation was done by circulating the questionnaire among the experts in the field and suggestions were incorporated. It was then pretested among 10 randomly selected dentists to ensure it was clear, unambiguous and comprehendible. The final questionnaire was refined with a total of 39 questions that was divided into 3 heads, namely demographic details, attitude and practice pertaining to dental ergonomics. This was then distributed randomly online and through handouts to around 325 dental practitioners and post graduates across the Chennai city who were requested to fill in the questionnaire. All responses from the participants were recorded and tabulated in a Microsoft excel worksheet.

Questions on practice were scored and every correct answer was marked 1 and every wrong answer marked 0. The scores were totalled for 18 questions. Scores between 0- 6 was graded poor, 7- 12 as fair and 13-18 as good. The data obtained was then interpreted.

Results

The questionnaire was circulated to about 325 individuals, amongst which only 272 returned filled in forms. Out of the 272 forms returned, only 208 were complete. Incomplete questionnaires were excluded from the study. Thus with a total of 208 completed questionnaires included in the study, the response rate was 64%. Male participants (51%) were marginally more than the females (49%) with a majority of them under the age group 39- 42 years. 71.2% were dental practitioners and the rest of the study population were post graduates. The most frequent years of experience was 8-15 years (43%) and maximum participants (67.3%) belonged to the field of Conservative Dentistry and Endodontics while 12.5% were general dental practitioners.

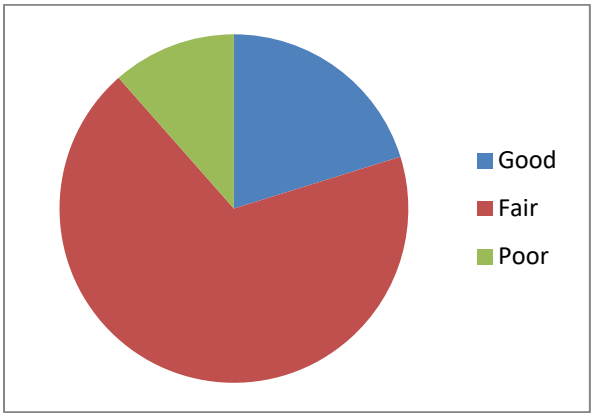
The table shows the response percentage of details assessing the attitude towards dental ergonomics. The percentage of participants who are aware of dental ergonomic guidelines is as low as 35.6% and a major portion of the population (36.5%) are not sure about it. However, more than half of the study population (54.8%) accept to the fact that adopting ergonomic guidelines is feasible and comfortable during treatment procedures. Startlingly, only 28% exercise regularly to relieve postural strain. 48.1% have read articles/ books on dental ergonomics, however a colossal portion (64.4%) feel knowledge on ergonomic principles is insufficient among dentists. 82.7% are interested in knowing more

information on ergonomics, and a highly significant 87.5% want ergonomics to be a part of the dental curriculum.

The following pie chart represents the scoring of participants following assessment of ergonomics in daily practice. 20.2% of the study population were good, 68.3% of the participants were fair and 11.5% poor.

Table 1: Attitude towards dental ergonomics

	YES	NO	UNCERTAIN
Awareness on ergonomic guidelines	35.6%	27.9%	36.5%
Adopting ergonomic guidelines is feasible and comfortable during treatment procedures	54.8%	1%	44.2%
Exercising regularly to relieve postural strain	28.8%	26%	45.2%
Read any articles/ books on dental ergonomics before	48.1%	40.4%	11.5%
Knowledge on ergonomics is sufficient among dentists	14.4%	64.4%	21.2%
Interested to know more information on ergonomics if given	82.7%	4.8%	12.5%
Ergonomics should be a part of Dental curriculum	87.5%	1%	11.5%



Graph 1: Pie chart- Ergonomics in daily practice

Discussion

Ergonomics is an integral part of dental practice. Knowledge on ergonomics not only prepares practitioners for efficient clinical practice but also equip them to avoid and overcome work related health concerns. [11, 12] While enhanced productivity and treatment quality has always been the goal towards clinical excellence, ergonomics eases this by curbing both physical and cognitive stress.

Literature search reveals sprouting of occupation related musculoskeletal disorders in an alarming frequency amongst the dental community in the recent past. Studies worldwide conclude that lower back pain is the most predominant complaint from practitioners, followed by hand, neck, wrist and shoulder problems. A study by Sunisa et al [13] conducted among Dental Professionals in Thailand revealed high prevalence of pain in combination of sites rather than a single site on ergonomics risk assessment. Similarly, lower back pain and neck pain are the most commonly reported complaints among dental practitioners concludes Sayli et al's study conducted among dentists in Pune, India [14]. This is also in accordance with the study conducted among

Canadian orthodontists in Alberta where 59% reported lower back pain [15]. Such being the scenario, understanding the methods of improving such heath conditions becomes very crucial.

Considering the fact that only a meagre population of affected dentists seeks medical help, it becomes imperative to throw light on the importance of ergonomics in daily clinical practice. Thus, this study aimed at assessing the attitude and practice of ergonomics among dental practitioners and post graduates in the Chennai city.

Application of ergonomics in dentistry is tremendous and ranges through equitable usage of the dental chair, chair light and the operator's stool. Adopting ergonomic postures is feasible and comfortable during treatment procedures and 54.8% of our study population accepts to this. Prolonged postural strain creates a sense of discomfort and pain in back, neck and shoulder and can be prevented by taking short breaks between appointments and exercising regularly. It is essential to maintain an erect back with the elbow placed at the level of patient's head during work. Thighs should be placed parallel to the floor with feet flat on the floor. Lingual surfaces and maxillary teeth have improved accessibility and visibility through indirect vision and the chair light positioned right above the patient's head or slightly behind it augments visibility without interferences. Supine position of the patient helps the practitioner achieve neutral posture and dearticulating the headrest prior to procedures improve accessibility and reduce postural fatigue. Ideally, the operator's stool should have adjustable arm rest, height and angle, and should provide complete thoracic, lumbar and arm support. [16]

Amongst our study population, on scoring the practice of ergonomics in daily clinical set up, only 20.2% were good, whereas 68.3% were fair and 11.5% fell under the poor category. This is very low as compared to results obtained in similar studies in Hubli- Dharwad twin cities in India (55%) [17] and in Makassar by Mailoa and Rovani (38.6%) [18]. The results of the study help us conclude that the knowledge and practice of ergonomics is low among practitoners. This gives rise to the need to fill the void between scope of ergonomics in dental practice and incorporating it into daily practice. The best method to achieve this would be to imbibe knowledge and inculcate practice based on ergonomics from under graduation level. Undergraduates as well as post graduates irrespective of their speciality should be taught ergonomics as a part of the curriculum so that its importance is appreciated and practiced. This would build a strong platform that would sustain for the entire clinical life, ultimately reducing the occurrence of work related musculoskeletal disorders thus creating a healthy lifestyle.

Conclusion

Within the confinements of the current study, it can be concluded that the awareness on Dental ergonomics is seemingly low among practitioners. With the number of dental institutions increasing in India, dental education would play a pivotal role in training Dental students and rationing them to adopt commensurate knowledge and practice on ergonomics ultimately bringing forth clinical proficiency.

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