



Assessment of Dental Student Posture in Two Seating Conditions

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Introduction

In recent times dentistry has been considered as a demanding profession due to the need for high concentration and precision¹. Work-related musculoskeletal disorders, especially of the neck and upper limbs^{2,3} have become a common cause of premature retirement⁴. Dentists may adopt inflexible work postures which result in static activity of the muscles. This, in turn, may result in musculoskeletal disorders.

Methodology

The research was approved by the ethics committee of the School of Health Sciences. The study was outlined to all the Year 2 dental students at the University of Birmingham who were attending their first classes in the phantom head laboratory. Their consent for participation in the study was requested. Sixty students were randomly selected for the study (30 students were given Bambach seats (Fig 1) and 30 students were given conventional seats (Fig.2).

All students were trained in the use of the seats. After 10 weeks, the students were observed, with photographs being taken during their practical sessions in the phantom head lab. The photographs were then analysed using RULA (Rapid Upper Limb Assessment) (Fig 3). The RULA method uses diagrams of body postures and three scoring tables to provide an evaluation of exposure to risk factors by calculating a risk score. The risk scores are used for statistical analysis

Results

The results indicated that there was a significant difference between the RULA Scores for the two seats used (Fig 4 and 5). The Independent Samples T-Test results were significant ($t(58) = -8.72; p < 0.01$). The results indicated that the students using the Conventional Seat recorded significantly higher risk scores when compared with the students using the Bambach Saddle Seat ($p < 0.01$), suggesting an improvement in posture when using the Bambach Saddle Seat.



Fig 1.

Dental Student Working on Bambach Saddle Seat



Fig 6. Spine



Fig 2.

Dental Student Working on Conventional Flat Seat

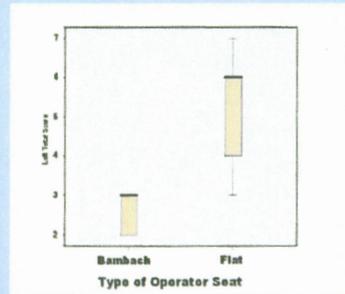


Fig 4.

Box Plot showing Grand Score for Left Side

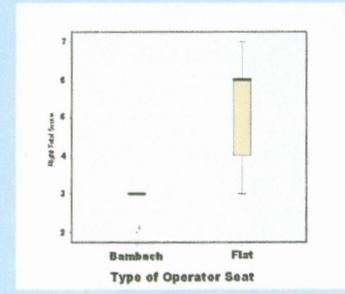


Fig 5.

Box Plot showing Grand Score for Right Side

Discussion

The results indicate that the students using the Bambach saddle seat were able to maintain a more healthy working posture after the 10-week period than those using a conventional seat. The students were able to maintain an acceptable position on the observed joints, which was not noted with the students using the conventional seats whose working posture deteriorated over time. The Bambach saddle seat can maintain the pelvis in an anterior tilted position and the seat tilt may be adjusted to achieve a slight lumbar lordosis, which is necessary to maintain a healthy spinal posture. The Bambach seat helps the spine to naturally rest in its normal 'S' shape (Fig 6). It is important to maintain this position in sitting, as it reduces the pressure on the intervertebral discs and static loads on the spinal extensors muscles

Conclusions

The results suggest that the use of modified seating, with training may improve the seated operating posture. The students using conventional seats recorded higher risk scores for musculoskeletal disorders than those using Bambach saddle seat.

References

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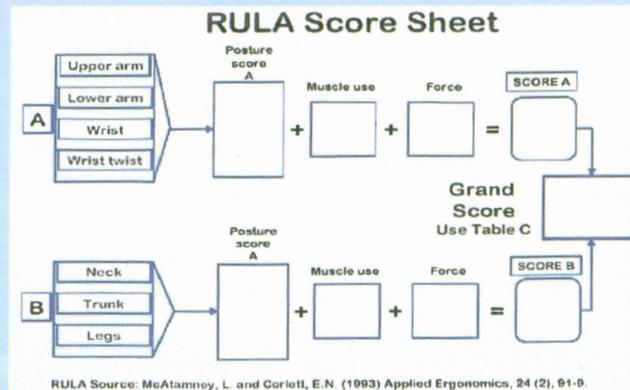


Fig 3. RULA Scoring Sheet