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Short Communication

Extracorporeal shock wave therapy- An emerging prospect in dentistry

Roxanne Genevieve Azevedo[1], Rudrakshi Chickanna[1,*], Prabhuji MLV[1]

[1] *Dept. of Periodontology, Krishnadevaraya College of Dental Sciences & Hospital, Bengaluru, Karnataka, India*

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ABSTRACT

Background : There has been an upsurge for exploring new frontiers in the field of medical science for improved treatment. Extracorporeal shockwave therapy (ESWT) has been extensively used in medical practice, for the management of urolithiasis, cholelithiasis, in various orthopedic and musculoskeletal disorders. The prospective applications of ESWT in the field of dentistry in providing beneficial outcomes, is no exception to this trend.

Aims and Objectives: To assess the awareness of the application of Extracorporeal Shockwave Therapy as a possible paradigm in various dental treatments among dental professionals.

Materials and Methods: This cross-sectional study was conducted among dental professionals across India. An online structured questionnaire was created and circulated to dental professionals via various online communication platforms. The result obtained was tabulated into tables and graphs.

Results: A large percentage of General dentists and postgraduates were aware of ESWT and the benefits it can bring about.

Conclusion: ESWT is no-exception to the emerging therapies that needs to be up to date among dental professionals. ESWT may be of useful adjunct for the management of Periodontal disease.

1. Introduction

The prospective applications of Extracorporeal shock wave therapy (ESWT) in the field of dentistry in providing beneficial outcomes, is no exception to this trend.[1] Extracorporeal shock wave therapy also known as "shockwave bio-surgery of sound", is a non-invasive treatment modality implementing shockwaves to treat chronic, painful conditions of the musculoskeletal system.[2,3] It has been used for the management of urolithiasis, cholelithiasis and sialolithiasis.[4] In 2010, Li et al hypothesised for the first time that ESWT was helpful for the treatment of peri-implantitis.[5]

Understanding the emerging aspect of extracorporeal shock wave, an attempt of creating awareness among the Dental Professionals has been made through this study.

2. Materials and Methods

This cross-sectional observational study was conducted among 156 dental professionals, included Consultants. Post graduate students and General Dentists across India. An online structured questionnaire was created and circulated to all the dental professionals via various online communication platforms. A multiple-choice questionnaire of about 25 questions was used for data collection and participants were also given the opportunity to expand on their responses.

* *Corresponding author*.
E-mail address: rudrakshichickanna@gmail.com (R. Chickanna).

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3. Results

The present study demonstrated that about 50% of dental professionals were aware of various applications of ESWT in the dental aspect, some of which are alveolar bone regeneration & vascularization, bactericidal properties, management of salivary calculi and also management of biofilm associated with periodontal diseases. The familiarity of ESWT was mainly through research, colleagues, workplace or social media. It was seen that a large number of professionals thought of acquiring alternative methods for more efficient treatment modalities, ease of work, less chair time in dentistry, A majority of dental professionals were keen to know more and would definitely opt for ESWT as a treatment modality if given a choice.

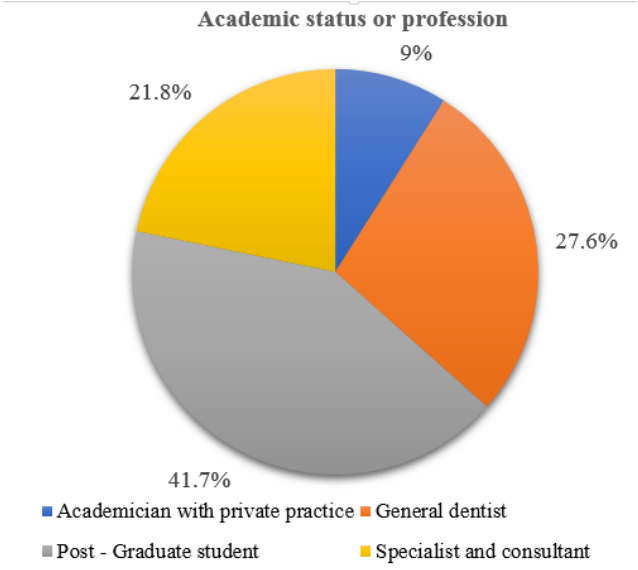

Fig. 1: Dental professionals participated in the study

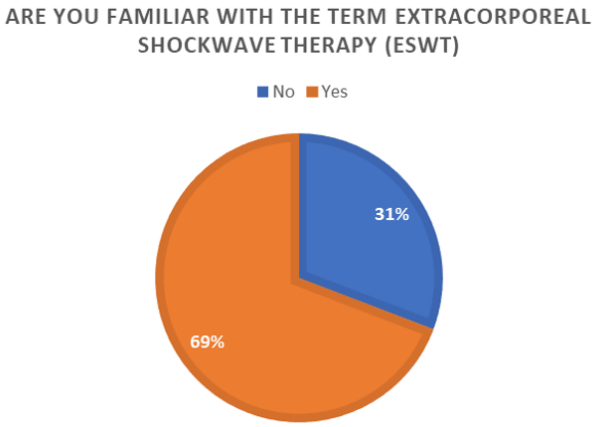

Fig. 2: Participant familiar with the term Extracorporeal Shockwave Therapy

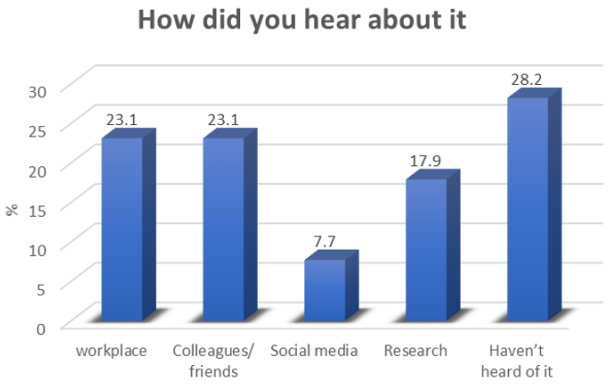

Fig. 3: Extracorporeal Shockwave Therapy was known through various Portals

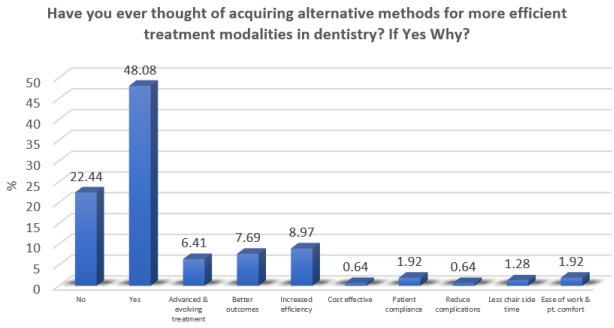

Fig. 4: Acquiring alternative treatment modalities

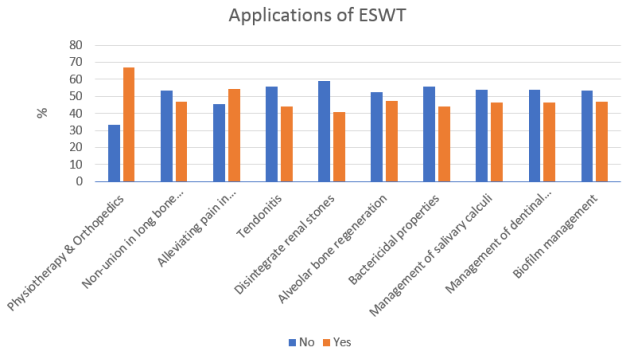

Fig. 5: Percentage of various applications of Shockwave therapy known by dental Professionals

4. Discussion

This questionnaire-based study was to assess the awareness of the application of Extracorporeal Shockwave Therapy as a possible paradigm in various dental treatments among dental professionals.

With the limited, yet supporting literature on the advantages of shock waves, there exists a motivating evidence that implementation of the beneficial properties of

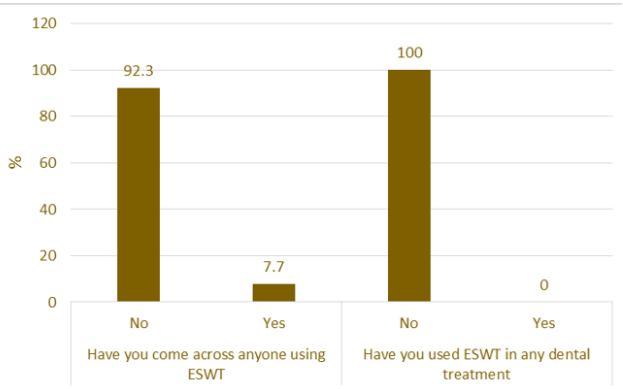

Fig. 6: Percentage of dental professionals who have come across the use of Shock wave Therapy

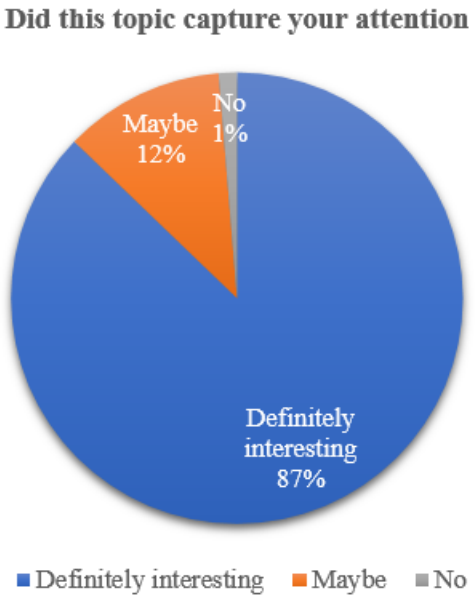

Fig. 7: Percentage of dental professionals interested in Extracorporeal Shockwave Therapy

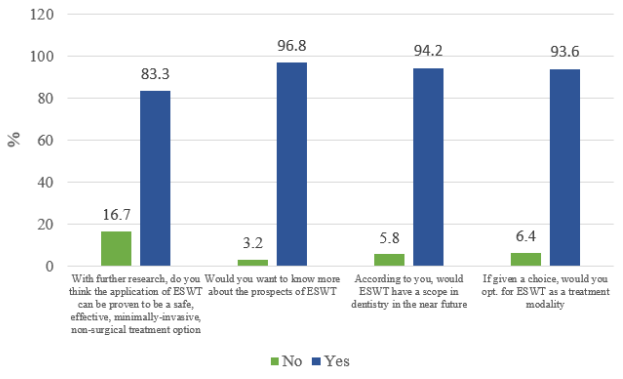

Fig. 8: Percentage of dental professionals that would opt. for Extracorporeal Shockwave Therapy if given a choice

shock waves with suitable modifications in the periodontal arena can prove to be a valuable modality in enhancing the treatment outcome.

There has been an upsurge for exploring new frontiers in the field of medical science and Dental for improved treatment. Extracorporeal shockwave therapy (ESWT) has been extensively used in medical practice, for the management of various orthopaedics, traumatology and musculoskeletal disorders.[1]

Another field of shock wave application is the treatment of tendons, ligaments and bones on horses in veterinary medicine.[6] As emerging technologies in Lithotripsy.[7]

The word "Extra corporeal" means "outside the body" and also refers to the fact of shockwaves being generated outside the body.[2] Extracorporeal shock wave therapy (ESWT) was introduced in Germany in 1980s. This principle was then implemented to a wide arena of treatment modalities like treatment of dermal wounds, orthopaedic conditions and various musculoskeletal conditions.[4] A vast scope in the treatment of oral and maxillofacial conditions was later seen.

4.1. It is incorporation of Shock waves in Oral application

Shockwaves can propagate rapidly through a medium and are characterized by abrupt changes in pressure, temperature, and density of the medium.[8,9] The mechanism of increased efficacy of shockwave with desensitising agents has shown good results coz shockwaves may be due to increased penetration of the desensitising agent into the dentinal tubules as a result of the change in pressure caused by the shockwaves to activate osteoblasts, osteogenic growth factors and their progenitors to cause increase in neovascularization. Here, the induction of new bone formation using ESWT was found to promote regeneration of alveolar bone lost following experimentally induced periodontal disease.[10]

Lucia et al (2006) evaluated the effects of shock waves on osteoblast-like cells (MG63) when using two different shock wave generators (electrohydraulic and electromagnetic devices) in terms of cell damage, cell viability, osteogenic phenotype expression and cytokine production.[11]

The prospects of this non-invasive treatment modality with its antibacterial efficacy, especially to the periodontal-pathogens, potential to induce alveolar bone regeneration and rapid periodontal remodelling, combined with anti-inflammatory, analgesic and tissue-regenerative properties with minimal or no documented side effects, provide a substantial backing for its potential to be implemented in periodontal therapy.

5. Conclusion

A large percentage of General dentists and postgraduates are aware of ESWT and the benefits it can bring about.

With further research and evidence, the use of ESWT in the field of periodontics can be anticipated as a treatment modality into routine practice.

6. Conflict of Interest

The authors declare that there are no conflicts of interest in this paper.

7. Source of Funding

None.

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Author biography

Roxanne Genevieve Azevedo, Post Graduate Student

Rudrakshi Chickanna, Reader

Prabhuji MLV, Professor and HOD

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