Original Research

Effectiveness of audio-visual aids in patient education on periodontitis in clinical setting – an interventional study Sonesh Sharma ¹, Vijayta Sharva ², Swapnil Jain ³, Ritu Sharma ⁴, Monesh Sharma ⁵, Sneha Sharma ⁶

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ABSTRACT

Background: Patient education regarding their clinical conditions and all the treatment options is of utmost importance. In order to simplify the process, we can use audio visual aids as clinicians.

Methods: An interventional study was conducted using a pre-test and post test design to assess changes in patient knowledge after exposure to three types of audio-visual aids like videos, posters and presentations . A total of 100 consented periodontitis patients were randomly divided equally into two groups of audio visual aids group and control group. All the patients received a structured questionnaire first pre test ones to assess their baseline knowledge and then post test after receiving the education to assess how much knowledge they have retained and which type of audio visual aid is the best . The questionnaire contained 15 multiple choice questions .

Results: No significant difference was found in the baseline knowledge amongst two groups. The patients who received audio visual aids had significantly higher scores in their post test compared to patients who received standard education

Conclusion: In today's digital era different types of audio visual aids are an effective method to educate the patient in daily clinical practices

Introduction

Globally, periodontal diseases, including gingivitis, affect a significant portion of the population. In India, the prevalence of severe periodontal disease among individuals aged 15 years and older is estimated at 21.8% (WHO)¹ Periodontitis is a severe gum disease that not only affects the gums but also damages the bone structures supporting the teeth, often resulting in tooth loss if left untreated. Periodontitis is characterized by chronic inflammation of the periodontium, leading to progressive destruction of the supporting tissues of the teeth. The condition starts with the accumulation of plaque, which, if not removed through proper oral hygiene, hardens into tartar. This causes the gums to become

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inflamed and, over time, can lead to bone loss around the teeth.

The study emphasizes the importance of health education in the management of periodontitis, noting that audio-visual aids can significantly enhance patient understanding of the disease and its prevention. An important aspect of dentistry is to motivate individuals for undergoing routine dental check-ups and treatment, if deemed necessary. It is patients' right to receive full, clear and accurate information in simple language which they understand, before, during and after treatment, so that they can make informed decisions in partnership with the dental practitioner providing oral care.²

It has been documented in the literature that patients who have a good knowledge of their disease or the treatment procedure have better outcomes that those who lack knowledge and providing patients with greater information generally causes increased compliance in patients.³ Audio visual (AV) aids, which combine auditory and visual elements, have emerged as potent tools in enhancing patient education. These aids can make complex information more accessible and engaging, potentially leading to better comprehension and adherence to recommended oral hygiene practices.⁴

By assessing changes in patient knowledge, attitudes, and behaviours before and after exposure to AV materials, this study seeks to determine whether incorporating AV aids into routine dental practice can enhance patient education and promote better oral health outcomes.

This study is essential to bridge this gap by evaluating the impact of visual aids on patient understanding, motivation, and adherence to periodontitis prevention and management. The findings could help develop more effective educational strategies, ultimately contributing to improved oral health outcomes and reduced disease burden.

Material and methods

This was interventional study using a pre-test and post test design to assess changes in patient knowledge after exposure to audio-visual aids. The data for this study was collected from patients visiting the dental outpatient department (OPD) of a clinical setting. Participants were selected based on the inclusion and exclusion criteria. Pre- and postintervention assessments were conducted using a structured questionnaire.

The study included one control group of 50 patients who received verbal instructions for patient education and one audio-visual group of 50 patients who received both conventional

(printed material) and audio-visual aids in the form of images, posters, videos and PowerPoint presentations for patient education.

Individuals with hearing or visual impairments that hinder participation in audio-visual education and patients who have undergone recent periodontal treatment (within the last 3 months) were excluded.

The study setup included:

Printed educational leaflets on periodontitis (for the control group-CO)

For audio visual (AV) Group, Visual aids such as: Educational videos on periodontitis (animations, expert explanations). Infographics and posters illustrating causes, symptoms, and prevention. PowerPoint presentations with images and text

Assessment tools were structured questionnaire for pre- and post-intervention knowledge assessment.

After the education session of patients in both the groups immediately a Post-Education Assessment was done which gave information about the knowledge, awareness and clinical scores.

Statistical analysis

Statistical analysis of data was processed using Microsoft excel 2016 and statistical package for the social sciences (SPSS) software (version 30, SPSS Inc., Chicago, IL, USA). Mean and

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standard deviation of all parameters were calculated. For intra group and inter group comparison, independent t-test was carried out. $p \le 0.05$ was considered as a significant result.

Results

A pre test and post test was given to each participant to fill which was in the form of multiple choice based questionnaire format. The questionnaire had 15 questions assessing their knowledge which were related to oral hygiene, brushing techniques, dental knowledge, gingival and periodontal health, diseases of teeth and their treatment.

The pre test responses were similar in both the groups which indicated that baseline knowledge of both the groups were not different. But the post test revealed a difference in correct and incorrect responses in both the groups. The highest number of correct responses for AV group were 92.8% and in CO group were 84.7% for the same query. The correct responses of participants are given in Table 1.

No significant differences were observed statistically between both the groups at baseline level. After periodontal patient education, the knowledge scores improved in both groups but the scores for post test were significantly higher in the AV groups compared to CO group

Discussion

Periodontitis remains a major public health concern in India, affecting a significant portion of the population due to poor oral hygiene awareness and inadequate preventive measures. Traditional patient education methods, such as verbal instructions, often fail to ensure longterm knowledge retention and behavioural change.⁵ Audio-Visual aids, including videos, infographics, and animations, have shown promise in enhancing patient comprehension and engagement in various health domains. However, limited research has been conducted in India to assess their effectiveness specifically in periodontal health education. This study was essential to bridge this gap by evaluating the impact of visual aids on patient understanding, motivation, and adherence to periodontitis prevention and management. The findings could help develop more effective educational strategies, ultimately contributing to improved oral health outcomes and reduced disease burden.

As a clinician, one must be fully prepared and well versed with their patient's disease and treatment plan in order to explain it to them in easy way so that they can understand fully and have complete trust in the doctor. As we all know prevention is better than cure, we as dentists must guide and educate the patient regarding the maintenance of their oral health and hygiene so that they can avoid bigger complications related to dental diseases⁶.

In today's digital world we all know that we retain and understand things and concepts better when audio visual aids like posters, videos and presentations are used for educating compared to the conventional method of verbal explanation. This is in line with cognitive theory of multimedia learning described by Mayer and Moreno⁷. Renton- Harper et al also showed in their study that watch and follow instructional video improved plaque removal by electric toothbrush when compared to the use of written instructional leaflet⁸.

As seen in the above studies, present study also shows and proves that audio visual aids both conventional and advanced have an upper hand by a significant margin when compared to traditional verbal explanation methods. A contributing factor for reason for these results must be that when patients watch a video of teeth and their surrounding structures, they understand the anatomy and how to take care of the complex parts which they cannot see on a daily basis. Nowadays with advancement in editing and graphics, clinicians can easily use 3D videos and images to make the patients understand better about their teeth and mouth.

The audio-visual aids not only improve the

between patient and dentist during treatment explanation procedures.

patient's knowledge but also bridges the gap

Table 1: Percentages of patients with the correct response to the questions for the pre-test and post-test in the AV and CO-group. The correct response is highlighted in the following questionnaire.

S	Questions	Audio visual		Control group	
1					
1	How many times should you brush your teeth?	/5./	91.0	69.0	90.0
	a) Once b) I wice (morning and night)				
	c) Only sometimes d) I don't know			70.00	
2	How should you brush your teeth?	75.7	92.8	52.33	84.7
	a) Fast and horizontal motion b) Vertical motion				
	c) Gentle circular motion, swiping down d) l don't know				
3	Apart from tooth brushing, what other methods	42.6	65.7	30.57	48.50
	a) Mouthwash h) Dontal floss				
	c) both a) and b) d) $I don't know$				
1	If food gots stuck in botwoon your tooth what to	30.0	50.0	33.30	567
т	use	30.0	50.0	55.50	50.7
	a) Dental floss b) Interdental brush				
	c) both a) and b) d) I don't know				
5	How often should you change your toothbrush?	15.6	78.98	40.0	72.3
	a) Every month b) Every 2 years				
	c) I don't know d) Every 3-4 month when bristled become frayed				
6	Gingivitis means:	12.0	59.6	22.3	45.8
	a) Healthy gums b) Gums are light in colour				
	c) Red, swollen, bleeding gums d) I don't know				
7	When gingivitis develops into periodontitis:	4.3	29.5	20.0	29
	a) There is bone loss b) Teeth become mobile/loose				
	c) Both a) and b) d) I don't know				
8	Periodontitis leads eventually to:	5.85	57.3	12.33	25.3
	a) Decay of all teeth b) Loss of teeth				
	c) Yellowing of teeth d) I don't know				
9	How often should you visit your dentist?	11.00	50.00	2.34	14.5
	a) Every 6 months b) Every 5 years				
	c) Every 2 years d) I don't know				

10	Which specialist should you visit if you have gum disease:	14.00	30.0	2.87	13.3
	a) Periodontist b) Endodontist				
	c) Oral pathologist d) I don't know				
11	Periodontitis is linked to	17.1	68.6	13.54	49.7
	a) It is not linked to any other disease b) Heart disease, premature birth and uncontrolled diabetes				
	c) Heart disease only d) I don't know				
12	Tartar or calculus is removed by	22.0	29.9	0.00	10
	a) Brushing the teeth b) Water				
	c) Scaling d) I don't know				
13	Scaling results in	6.0	37.6	7.60	14.3
	a) Maintenance of healthy gums b) Fracture of teeth				
	c) Weakens the teeth d) I don't know				
14	The most important act in periodontal treatment is:	4.8	50.7	3.78	35.8
	a) Oral hygiene between teeth and gums				
	b) Maintenance of clean tongue				
	c) Teeth whitening				
	d) I don't know				
15	If the periodontal pockets persist even after scaling and root planning is done:	5.0	36.7	6.8	14.3
	a) Gum/flap surgery is advised				
	b) No other treatment required				
	c) Root canal treatment is advised				
	d) I don't know				

Table 2 : Mean and standard deviation for both the groups.

Time point	Mean±SD		P value
	Group I	Group II	
	(AV group)	(CO)	
Pre test	2.85±1.94	3.47±1.84	0.315
Post test	7.65±2.34	5.86±2.95	0.01*
P value	0.000*	0.001*	

Conclusion

The use of audio visual aids proves to be an

excellent method to retain knowledge about health, disease and prevention. In dental

clinics, the use of images and videos of cases, anatomy and outcomes will help in communication and patient compliance will be better. It is important to note that these aids are just an adjunct and not replacement for the patient-clinician interaction. Long term studies are required to understand the role of audio visual aids for patients in dentistry better.

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