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Effectiveness of application of visual aids for education and motivation of patients with chronic periodontitis – A questionnaire survey

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Abstract

Aim: To investigate the effectiveness of Visual aid over Verbal method in education and motivating patients with chronic periodontitis for maintenance of oral health

Materials and Methods: A total of 50 patients with chronic periodontitis was included in the study.The study participants received verbal instructons about periodontal disease and therapy and the importance of maintaining a good oral health followed by which they were asked to fill a questionnaire. The same patients next received instructions through visual aids followed by which they filled the second questionnaire.

Results: The number of patients who understood gum disease much better significantly increased when visual aids were used compared to verbal aids with a P value<0.001 (Table 1). Similarly number of patients who felt more motivated In stabilizing the gum disease (figure 2) also significantly increased with visual aids with P value <0.001.

Conclusion: Patients found visual aids as a better medium for understanding about the periodontitis and maintenance of oral health. It was highlighted that the use visual aids in daily practice by dental surgeons helps to improve a patient's understanding towards periodontal diseases and how to maintain a good oral hygiene thereby reducing the risk of further progression of the condition.

Keywords: Audio visual aids, Health education, Oral health, Periodontitis.

Introduction

In the treatment and prevention of sickness, health education is a potent and effective medicine. If it is offered with great awareness by every health worker, in whatever setting—hospital, school, health centre, home, and community as a whole—it will be the best tool for enhancing health. The use of audio-visual tools is crucial in health education. Patient education is a crucial and yet underappreciated duty of a health provider. According to John Burton in 1955, audio-visual aids are those sensory things or images that initiate, promote, or reinforce learning.

The instructional approach to education known as audio-visual aids uses both audio and visual as a form of comprehending. According to Carter. V. Good, audio-visual aids are those that aid in concluding the three-part learning process of stimulation, classification, and incentive. According to McKean and Roberts, audio-visual aids can also be thought of as supplemental tools that allow teachers to better clarify, establish, and link ideas through the use of several sensory channels.[1]

The use of audio-visual aids serves to increase the concreteness of teaching and learning, fulfil an instructional function, pique the group's attention, make teaching a successful process, and provide the best motives and crystal-clear visuals. There are numerous uses for media or educational resources in the field of health care.1 when the media reaches more senses, including touch, sight, and hearing, it seems that learning and understanding follow. Three categories of audio-visual assistance can be made: (1) pure auditory; (2) pure visual; and (3) integrated audio-visual. Videos, posters, movies, periodicals, books, and other audio-visual materials are used to teach using them.

Periodontitis is the inflammation of the gums and bones surrounding the teeth. A common condition called periodontitis can be avoided by practising good oral hygiene. Gingivitis is the early stage of gum disease, and once it progresses to periodontitis, it is permanent. Poor dental hygiene is the main cause of periodontitis, which can ultimately result in tooth loss. With a frequency of 11.2% and an estimated 743 million sufferer'sworld-wide, severe periodontitis is the sixth most common disease in the world.[2]

Maintaining proper dental hygiene is the first step in controlling gingivitis and preventing periodontitis. In the treatment of periodontal disease at any stage, patient motivation and comprehension are crucial. Because they are more aware of their illness and follow oral hygiene recommendations when patients are motivated, their disease stabilises. [2] This is corroborated by a cross-sectional study that found that periodontal patients who were more motivated had better oral health, indicating that their level of disease self-management was impacted. 3 Instructions offered must be recalled and comprehended by the patients for oral hygiene to be effective.

Clinicians sometimes offer patients instructions that are unclear or too complicated for them to understand. It has been suggested that instructional films be made by the experts who are treating the patients in order to make sure that the precise information is included and delivered to the patients.[4]

Thus, audio-visual tools can help patients better comprehend periodontal disease, including the causes of the condition and how it progresses. Additionally, by instructing patients on proper brushing and flossing procedures and outlining the benefits of periodontal therapy, it encourages them to maintain good oral hygiene.[5]

It is difficult for a general practitioner to verbally explain about the gingivitis/periodontitis conditions as majority of the population are unaware about this condition. The aim of this small survey questionnaire is to investigate whether use of visual aids is applicable in creating awareness about periodontitis. The goal of the study was to increase patients' motivation to practise excellent oral hygiene and their comprehension of periodontal disease and the value of dental care through the use of visual aids.

Methods

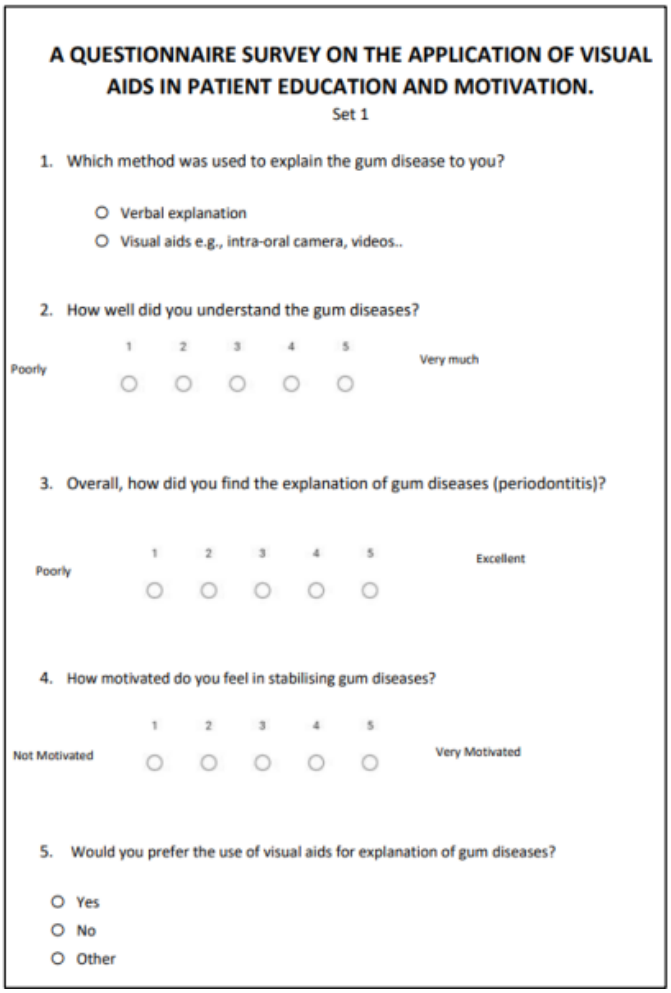
This pilot questionnaire survey was carried out in 50 patients diagnosed with gingivitis or periodontitis, who has reported to the Department of Periodontology, Malabar Dental College and Research Centre, Kerala, India from May 2022 – June 2022. Patients were selected according to 2017 AAP classification. Patients with periodontitis stage I and stage II grade A and Grade A and B are included in study. Patients of age ranging between 20 years and 55 years were clinically examined and those with more than 5 mm Pockets and bleeding on probing were included in the study.

In this survey 50 patients diagnosed with gingivitis or periodontitis were given verbal explanation about the gum disease conditions and treatment plan and oral hygiene instructions. They were given a detail description in their local language of their current gingival disease and on how to take proper care of their oral hygiene to improve the gingival status. Then they were given a questionnaire form according to their preference in local language or English to fill about the use of verbal explanation in understanding the gingival condition before the use of visual aids (figure 1).

Following the verbal explanations, these 50 patients received visual aids about periodontal disease awareness, treatment, and oral hygiene maintenance in the form of posters, videos, and intra-oral cameras, which were also used as assistant aids to show the amount of plaque or calculus present in them that contributed to the condition of gingivitis or periodontitis. Following the use of visual aids, these patients were given a questionnaire to complete in order to indicate if the use of visual aids during the explanation improved their understanding of the periodontitis/gingivitis condition. (Figure 2).

Statistical analysis

The data was entered in Microsoft Excel sheet and the data analysis was done using statistical software SPSS version 24. Descriptive statistics giving frequency and percentage were calculated. Wilcoxon signed ranks test were used to compare the responses' value < 0.05 was considered statistically significant.



A QUESTIONNAIRE SURVEY ON THE APPLICATION OF VISUAL AIDS IN PATIENT EDUCATION AND MOTIVATION.

Set 1

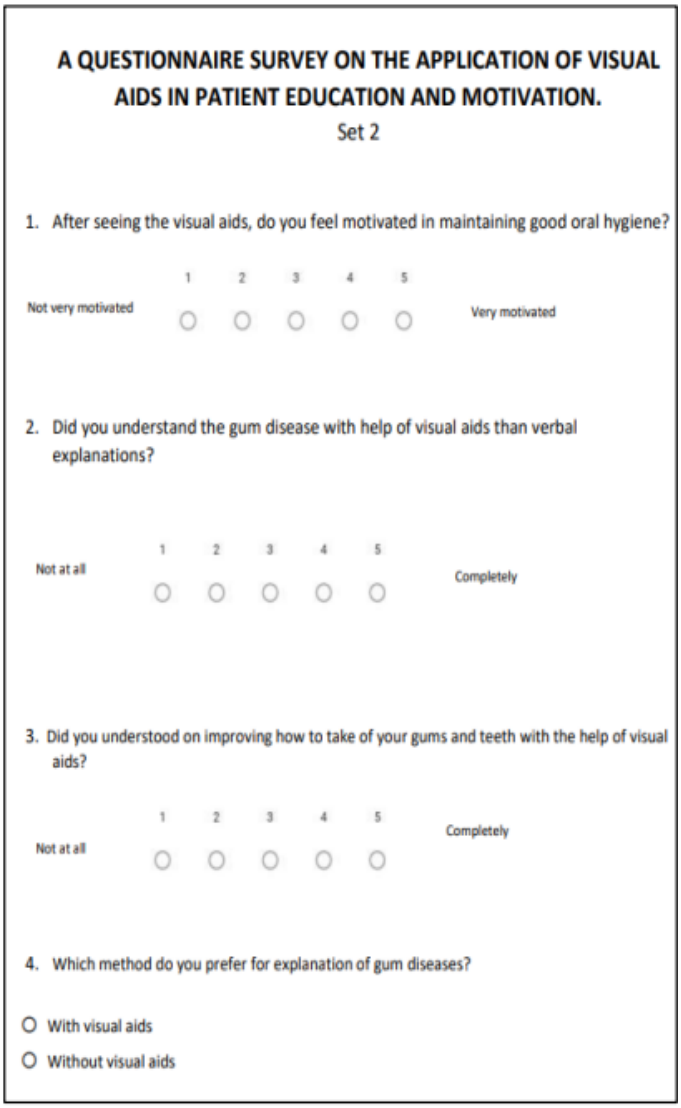
1. Which method was used to explain the gum disease to you?
   - ○ Verbal explanation
   - ○ Visual aids e.g., intra-oral camera, videos..
2. How well did you understand the gum diseases?

   Poorly 1 2 3 4 5 Very much
3. Overall, how did you find the explanation of gum diseases (periodontitis)?

   Poorly 1 2 3 4 5 Excellent
4. How motivated do you feel in stabilising gum diseases?

   Not Motivated 1 2 3 4 5 Very Motivated
5. Would you prefer the use of visual aids for explanation of gum diseases?
   - ○ Yes
   - ○ No
   - ○ Other

Figure 1: Questionnaire given after verbal explanation.



A QUESTIONNAIRE SURVEY ON THE APPLICATION OF VISUAL AIDS IN PATIENT EDUCATION AND MOTIVATION.

Set 2

1. After seeing the visual aids, do you feel motivated in maintaining good oral hygiene?

Not very motivated 1 2 3 4 5 Very motivated

2. Did you understand the gum disease with help of visual aids than verbal explanations?

Not at all 1 2 3 4 5 Completely

3. Did you understood on improving how to take of your gums and teeth with the help of visual aids?

Not at all 1 2 3 4 5 Completely

4. Which method do you prefer for explanation of gum diseases?

- With visual aids
- Without visual aids

Figure 2: Questionnaire given after use of visual aids.

Results

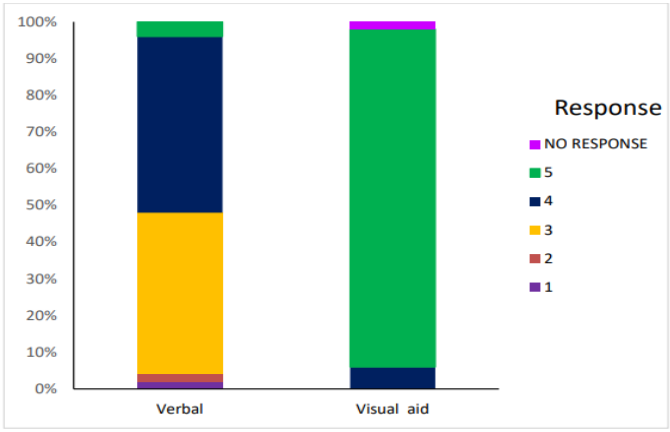
In the initial survey of 50 patients, the results concluded that 52% of patients understood the gum disease very well in verbal explanations and among them about 90% of them did not find the verbal explanation as a good medium for better understanding of the gum diseases. Patients' motivation to stabilise their diseases varied, with 31% of patients stating a lack of motivation. Among them almost all, that is 98% of the patients would have preferred the use of visual aids for better understanding.

Table 1: Comparison of the Response to how well Did you understand gum disease.

Response to how well Did you understand gum disease?	Verbal N	Verbal %	Visual aid N	Visual aid %	Z Value	P Value
1	1	2	0	0		
2	1	2	0	0	6.093	<0.001
3	22	44	0	0		
4	24	48	3	6		
5	2	4	46	92		
No response			1	2		
Total	50	100	50	100		

Test Applied: Wilcoxon Signed- Rank test

P value<0.05 statistically significant



Graph 1: Response to how well did you understand gum disease.

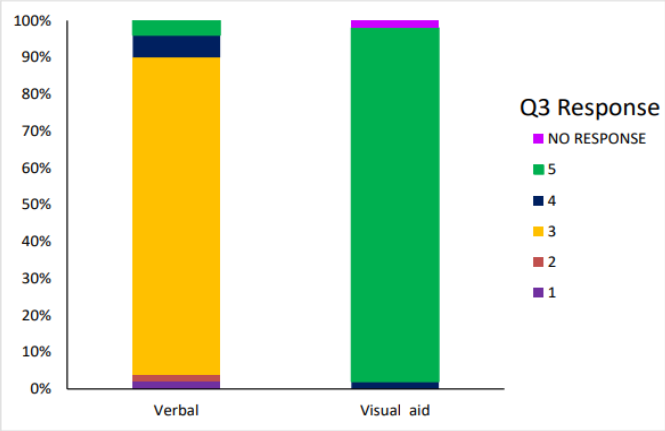
After introducing the intervention, For about 96% of patients felt completely motivated in maintaining oral hygiene after the use of visual aids in explanation and among them 92% of patients understood well with the help of visual aids than verbal explanations. In these patients, about 98% of the patients understood well on how to take care of gums and teeth to prevent the occurrence of gum diseases.

Table 2: comparison of Response to how motivated you feel in stabilizing gum disease.

Response to how motivated you feel in stabilizing gum disease?	Verbal N	Verbal %	Visual aid N	Visual aid %	Z Value	P value
1	1	2	0	0		
2	1	2	0	0	6.667	<0.001
3	43	86	0	0		
4	3	6	1	2		
5	2	4	48	96		
No response	50	100	1	2		
Total	50	100	50	100		

Test Applied: Wilcoxon Signed- Rank test

P value <0.05 statistically significant



Graph 2: Response to how motivated you feel in stabilizing gum disease.

The number of patients who understood gum disease much better significantly increased when visual aids were used compared to verbal aids with a P value <0.001 1(Table & Graph 1).

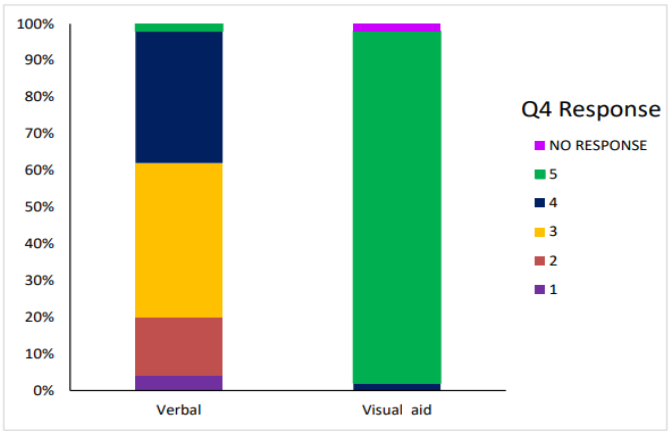
Similarly, number of patients who felt more motivated in stabilizing the gum disease (Graph 2) also significantly increased with visual aids with P value <0.001 (Table: 2). In the same way the number of patients who prefer the use of visual aids increased significantly increased (Graph: 3) after using visual aids with a P value <0.001. (Table 3)

Table 3: Comparison of Response to which method of explanation you prefer?

Response to which method of explanation you prefer ?	Verbal		Visual aid		Z value	P value
	N	%	N	%		
1	2	4	0	0	6.138	<0.001
2	8	16	0	0		
3	21	42	0	0		
4	18	36	1	2		
5	1	2	48	96		
NO Response	50	100	1	2		
Total	50	100	50	100		

Test Applied: Wilcoxon Signed - Rank test

P value <0.05 statistically significant



Graph 3: Response to which method of explanation you prefer.

Discussion

The findings of this study inspire additional investigation into visual aids as well as methods for boosting patient comprehension and motivation. This study has demo nstrated that the use of visual aids in general practise is well accepted and tolerated by patients with periodontal disease, teaching and inspiring them to pursue additional therapy to improve their dental hygiene. Additionally, this study demonstrates that people today prefer to employ visual assistance to comprehend their gum health concerns.

It may seem to be the case when visual aids are first introduced in general practise, but over time, they may end up saving time. However, if patients are more motivated and comprehend oral hygiene instructions better, less time will be needed to remove further calculus deposits, and treatment is more likely to be successful and feasible. This is especially true in general practises when dentists are already under time constraints. There will probably be less repetition of the diagnosis at subsequent sessions if patients have a clear knowledge of it at the outset. Videos offer a practical and simple method of health education that works for both individual and group study. An additional benefit of

audio-visual aids is that the film can be repeated to suit the demands of the audience.[6]

Significant disparities were observed in the knowledge that the patients had acquired in a study by Jain et al. to evaluate the knowledge gained through oral health education.[7] Lewis D., who conducted a comprehensive review, and Morley L et al. recognised computer-based education as an effective technique for the transfer of information and skill development for patients.

Numerous researchers from throughout the world agreed with this theory, illustrating the breadth of such a tool for disseminating knowledge about health. [8,9] Lewis D., who conducted a comprehensive review, and Morley L et al. recognised computer-based education as an effective technique for the transfer of information and skill development for patients.10 Numerous authors from throughout the world agreed with this theory, illustrating the breadth of such a tool for disseminating knowledge about health.[11]

Visual aids are utilised with patients not only for educational purposes but also during therapeutic processes since they have been found to increase patient compliance and decrease anxiety, especially in paediatric patients. According to Frere CL et al., the audio-visual system helps most dental patients receiving oral prophylaxis by reducing their anxiety, their pain, and the length of the operation.[12] When treating children, audio-visual aids are frequently used since they frequently experience treatment related anxiety. In a similar vein, Prabhakar AR has shown that the best method for reducing children's anxiety is audio-visual distraction. [13]

According to a study by Bentsen et al, video spectacles are not utilised to lessen the discomfort and pain associated with restorative dental treatment, but rather, most patients claimed that there is an overall good effect and that they would choose to use video eyeglasses for comparable events.[14]

The intraoral camera is one of the most used clinical computerizations in dentistry today. It aids in the discovery of the concealed and unnoticed flaws in teeth and other cavities.

Microstructures in the dental industry must be meticulously documented for patient education, treatment documentation, lecture illustration, publication, and web connectivity of challenging situations.

This study focuses on the important uses of intraoral cameras in dentistry and their potential effects on patient compliance with dental treatment. [15] Staudt et al. devised an accurate, standardised image analysis method using an intraoral camera for the evaluation of dental plaque. Due to its relatively simple access to the lingual surfaces, enhanced objectivity, sensitivity to a minor reduction in plaque, and increased objectivity, it can be useful in clinical trials and raise patient awareness. [16]

The use of visual aids for educational purposes does not depend on language fluency or comprehension, thus it helps patients grasp their diagnosis and follow oral hygiene guidelines.

There are a number of issues with the study. It would have been essential and beneficial to have a larger patient base and conduct research into the demographics of the patients and their experiences with the visual aids. Regular follow-up with the patients after the scheduled session would have been helpful to evaluate how well the visual aids were working

It might have been helpful to pilot the questions on a predetermined number of patients to account for varying levels of knowledge in relation to oral health. Additionally, the use of model oral hygiene presentations as a visual aid was disregarded. Future

studies should consider how a distinct category for demonstrations on a model or in the patient's mouth would have provided a more detailed knowledge of how dentists are imparting oral care instruction. [2]

The one-on-one education strategy is the most typical way to impart oral hygiene knowledge. Giving instructions one-on-one takes time, and it might not be realistic from the perspective of the community. Although there are other ways to communicate health information to patients, such as booklets and pamphlets, using audio-visual aids allows for much better visual perception and allows for repeated reinforcement of the instructions.[17] Socioeconomic statuses is just one of the many variables that affect patient motivation and understanding; in an ideal world, these would have been taken into account and may have revealed more information about the efficacy in various patient groups. It has demonstrated the possibilities of visual aids in Periodontology and highlighted areas that still require investigation.[2]

A lasting effect on the intended audience makes audio-visual aids excellent instruments for patient education. Audio visual aids can quickly convey the content in a better way than traditional word-to- word instructions since they repeatedly use the information to reinforce it for greater retention [18.]

Conclusion

The survey revealed that there was significant opportunity for raising motivation and comprehension of people with chronic periodontitis. Thus, the first set of survey results suggests that patients need the usage of more extra aids in addition to spoken speech in order to grasp their periodontal diseases. The use of audio-visual aids can successfully persuade patients to undergo dental operations by giving them anticipatory instructions. Techniques for audio and audio-visual distraction effectively reduced dental anxiety. When employed in the early stages of periodontal disease, visual aids can serve as a preventive tool. However, their application is not just likely to be restricted to the treatment of periodontitis. It's crucial to keep in mind that risk factors are just as significant in developing periodontal diseases as keeping good oral hygiene. Periodontal patients can readily be made aware of improving outcomes for periodontal illnesses and this in turn will minimise the incidence of losing a tooth by general practitioners incorporating audio-visual aids into everyday practise. The results from this survey emphasizes the assistance of visual aids in general dental practice to improve understanding of a patient about their periodontal status and thereby helping them to stabilize their oral hygiene to prevent the progression of the disease. The application of visual aids also helps the practitioner to explain the gingivitis/ Perio dontitis condition of a patient effortlessly.

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