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EFFECTIVENESS OF INDIVIDUALISED HOMOEOPATHIC MEDICINES IN CASES OF GINGIVITIS USING SULCUS BLEEDING INDEX AND VISUAL ANALOGUE SCALE: A SINGLE-ARM INTERVENTIONAL STUDY

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ABSTRACT

Gingivitis is a prevalent inflammatory disorder affecting gingiva, primarily resulting from buildup of dental plaque. It is characterized by symptoms such as gingival redness, swelling, and bleeding on probing, and signifies the initial reversible phase of periodontal disease. If untreated, it may progress to periodontitis and lead to destruction of supporting tissue of teeth.[1] Conventional management involves mechanical plaque control and antimicrobial therapy; nevertheless, there has been a growing interest in alternative and supplementary therapeutic methods in recent years.[2] **Objective**: To evaluate effectiveness of individualised homoeopathic medicine in cases of gingivitis using Sulcus Bleeding Index (SBI) and Visual Analog Scale (VAS). **Methods**: A prospective interventional single-arm study was conducted in the OPD/IPD of Dr. Girendra Pal Homoeopathic Hospital and Research Centre, Jaipur (Collegiate of Dr. Madan Pratap Khunteta Homoeopathic Medical college & Hospital, Sanganer, Jaipur). Fifty patients diagnosed with Gingivitis were enrolled according to predefined inclusion and exclusion

criteria. Individualised Homoeopathic medicines were prescribed based on the principles described by Dr. Hahnemann. Patients were followed for six weeks. Gingival status was assessed using the Sulcus Bleeding Index (SBI)[3] and Visual Analog Scale (VAS)[4] at baseline and at follow-up visits. Pre- and post-treatment scores were compared using paired statistical analysis to evaluate treatment outcomes. **Results:** Significant reduction in gingival inflammation and bleeding was observed at end of study period ($p<0.05$), indicating marked improvement following individualised homoeopathic treatment. **Conclusion:** The findings suggest, individualised homoeopathic treatment may be beneficial in reducing symptoms of gingivitis.

KEYWORDS: Gingivitis, Homoeopathy, Individualised treatment, Periodontal disease, Single-arm study.

BACKGROUND

Gingivitis is most common periodontal disease, affecting an estimated of 46.6% adults in India. It is more prevalent in males than in females, commonly seen in children as well.[5] Research shows prevalence in lower socioeconomic status, as high socioeconomic status people tend to show more positive attitude towards maintenance of oral hygiene, and they have better access to healthcare options.[6] Severe forms of gingivitis have been seen in pregnant women.[7] It has inspired many workers to conduct clinical studies on the effects of various treatments for Gingivitis. While homoeopaths claim success in treating these cases, few systemic studies have been published in academic journals. This text references some of those studies to support claims about effectiveness of individualised homoeopathic treatment in cases of Gingivitis.

In 2009, a randomised controlled trial was conducted with 240 participants using *Calendula* mouthwash and placebo control group by Khairnar MS et al. It concluded Calendula mouthwash is effective in reducing dental plaque and gingivitis.[8]

A study was conducted in 2016-2017, by E. Siva Rami Reddy et al. on 30 gingivitis cases. The results suggested safe use of *Plantago*- toothpaste in treatment of gingivitis.[9]

In 2018, Swet Nisha et. al. conducted a single blind triple-armed randomized controlled trial, on 318 patients suffering from Gingivitis, for 1 year. This study demonstrates that use Of Hypericum Q mouthwash had better results than Saline mouthwash as it significantly reduced

inflammation of gums All three groups showed a significant reduction in SBI, PI, GI and OHIS with $p<0.05$.[10] The behavioural component of the intervention was informed by Health Belief Model, focusing on improving patients' awareness of gingival inflammation, perceived benefits of oral hygiene measures and motivation for adherence to prescribed treatment.[11]

MATERIAL AND METHODS

1. **Inclusion criteria:** Patients of both sexes above 18 years of age presenting with redness, tenderness, swelling, bleeding gums on probing, plaque formation, bleeding spontaneously, with halitosis. Patients who have given voluntary consent. Cases associated with other systemic diseases.
2. **Exclusion criteria:** Patients presenting with periodontitis, undergoing orthodontic treatment.
3. **Study setting:** Participants were recruited through consecutive sampling, from patients attending OPD/IPD of Dr. Girendra Pal Homoeopathic Hospital and Research Centre, Jaipur (Collegiate of Dr. Madan Pratap Khunteta Homoeopathic Medical college & Hospital, Sanganer, Jaipur), presenting with gingivitis, during the study period (March 2023- October 2023) and fulfilling eligibility criteria were invited to participate.
4. **Sample Size:** The sample size was established according to the count of eligible patients visiting the outpatient department throughout study period who met inclusion criteria. Total of 50 participants were incorporated in study as the study was conducted over a short duration and consisted of single intervention group. No predetermined stopping rules were set.

   Individual participants were allocated to intervention without randomization. Given the study employed a single group interventional design, no blocking or stratification methods were implemented. The blinding of participants and intervention providers was not achievable due to inherent nature of intervention. However, outcome assessor responsible for clinical evaluation was not involved in administration of treatment and was blinded to intervention status of participant, thereby reducing assessment bias.
5. **Intervention:** The intervention consisted of individualised homoeopathic medicine selected on the basis of totality of symptoms after homoeopathic case taking. The medicine was administered orally in globule form size 60 in potencies 30C/200C/1M as per requirement of case. The selection of dose, repetition and if any change required as done according to Dr. Hahnemann's guidelines in 6th edition of Organon of Medicine.[12] Each participant received intervention individually from qualified homoeopathic

physician. Follow-ups were conducted weekly or at 15 days. The intervention was delivered over a period of 6 weeks.

6. **Hypothesis**: ALTERNATE HYPOTHESIS (H_1) –Individualized Homoeopathic medicines selected with the aid of Hompath software will have significant effect in the cases of Gingivitis.
7. **Outcome Measures**: Sulcus Bleeding Index (SBI): To evaluate the bleeding and inflammation. Visual Analogue Scale (VAS): To measure pain intensity.

   Both outcomes were assessed before initiation and after the completion of the individualized homoeopathic treatment, facilitating within subject comparison criteria Unit of analysis was individual participant, and outcome measures were documented separately for each subject.

OBSERVATION AND RESULTS

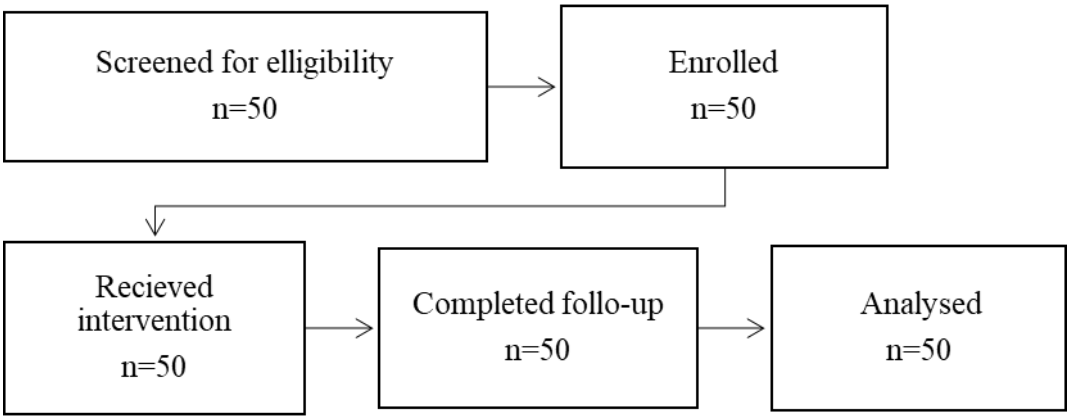

Figure 2: Study flow.

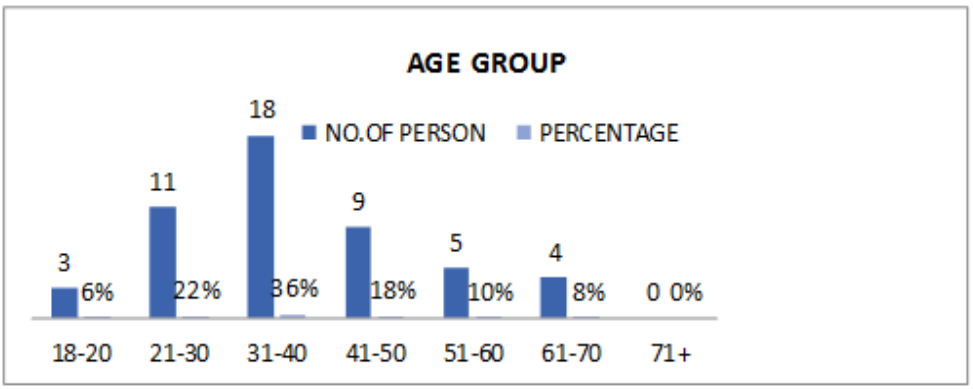

Figure 1: Graphical representation of incidence of AGE.

Out of 50 participants maximum affected belonged to 31-40 years age group (36%, n=18).

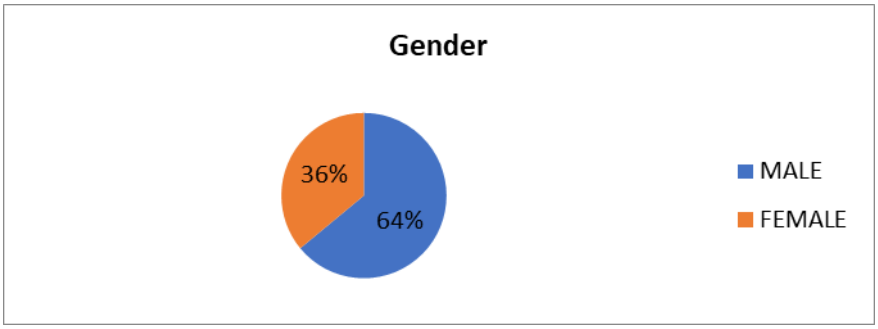

Figure 3: Graphical representation of incidence of Gender.

As shown in the graph below, out of 50 cases, males (n=32, 64%) were more affected than females (n=18, 36%)

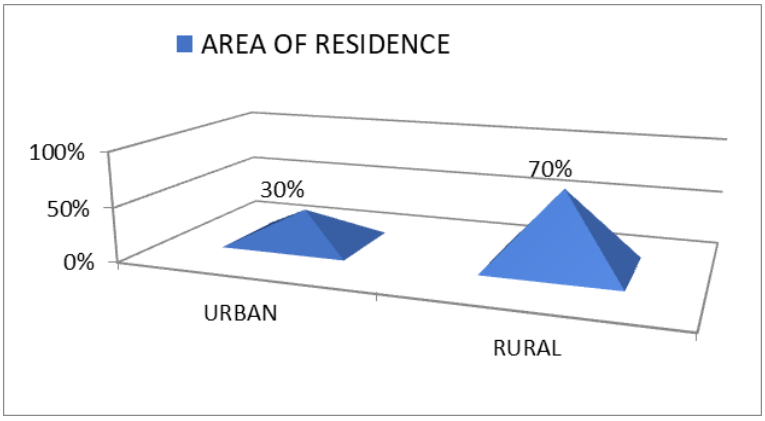

Figure 4: Graphical representation of: incidence of area of residence.

In the graph shown below, out of 50 people, maximum resided in the RURAL_region (n=35, 70%).

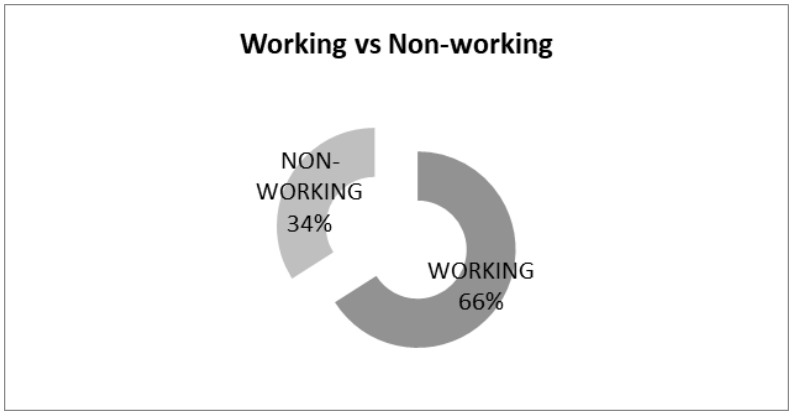

Figure 5: Graphical representation of incidence of working status.

Incidence of Working person – As shown in the graph, 33/50 person are working whereas 17/50 are non-working.

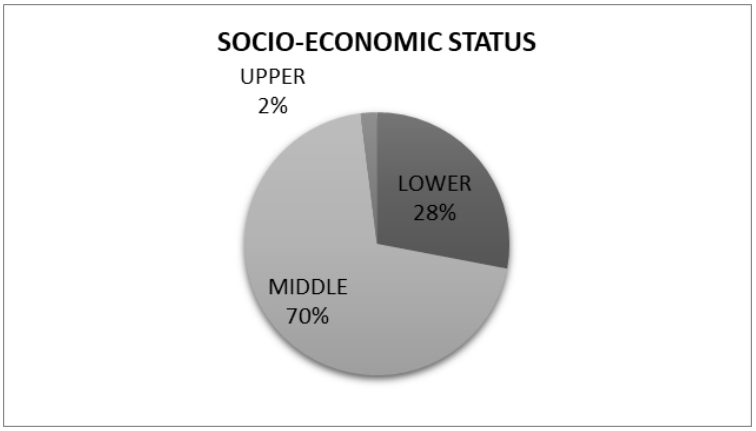

Figure 6: Graphical representation of incidence of Socio-economic status.

In the graph shown below, maximum people belong to middle-class of living, 35/50 (70%) whereas minimum no. of people belonged to upper-class of living, 1/50 (2%).

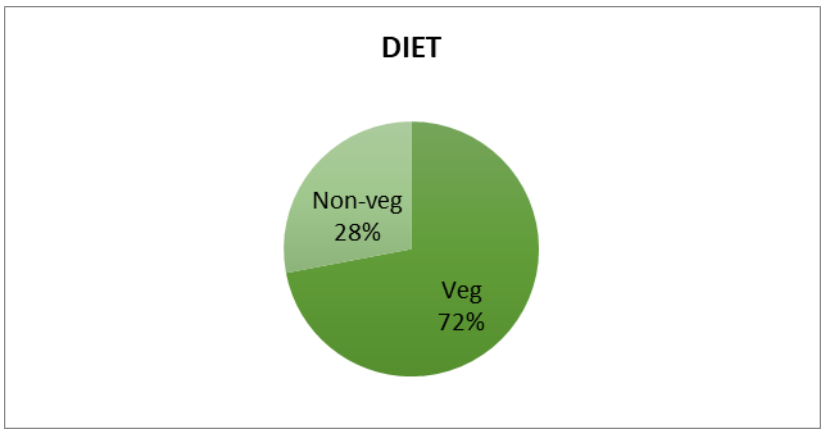

Figure 7: Graphical representation of incidence of DIET.

Out of 50 people, 36 are vegetarians and rest 14 are non-vegetarians.

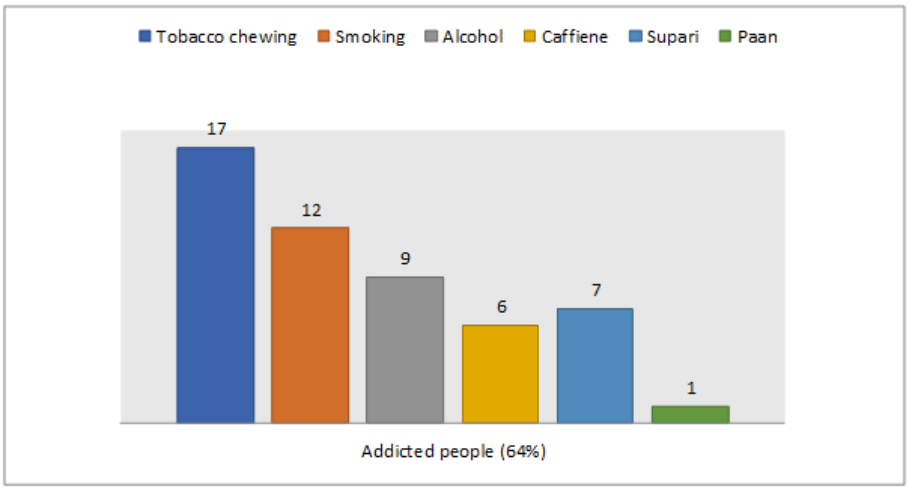

Figure 8: Graphical representation of incidence of addiction habits.

As the graph depicts, out of 50 people; 64%, n=32 addicted to one or more things whereas rest 36%, n=18 totally non-addicted.

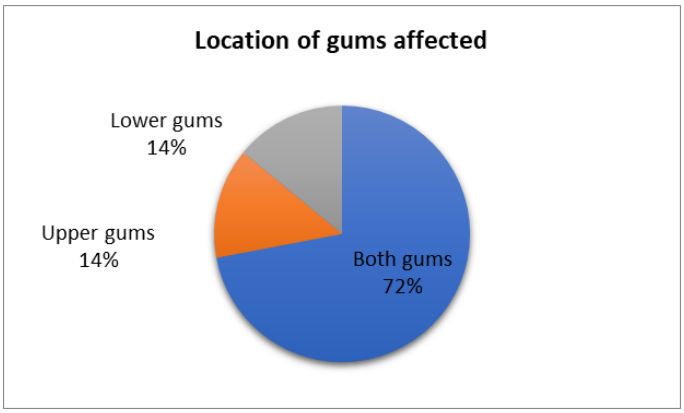

Figure 9: Graphical representation of incidence of Location of gums affected.

This graph depicts 40/50 (80%) people having plaque-type gingivitis whereas rest 10/50 (20%) having non-plaque.

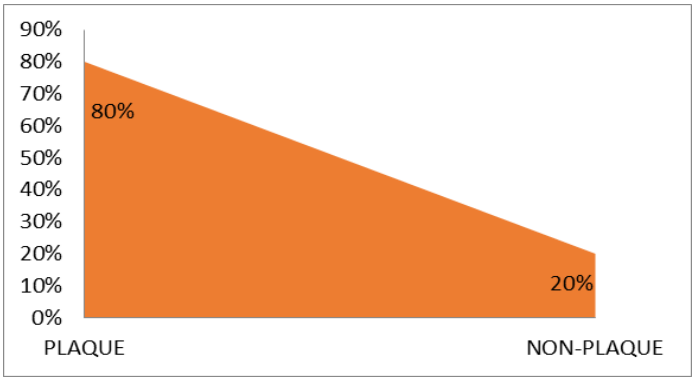

Figure 10: Graphical representation of incidence of TYPE of Gingivitis.

As shown in the graph below, in maximum no. of cases both gums were affected i.e 72% (36/50), followed by equal no. of upper & lower gums i.e 14% (7/50) respectively.

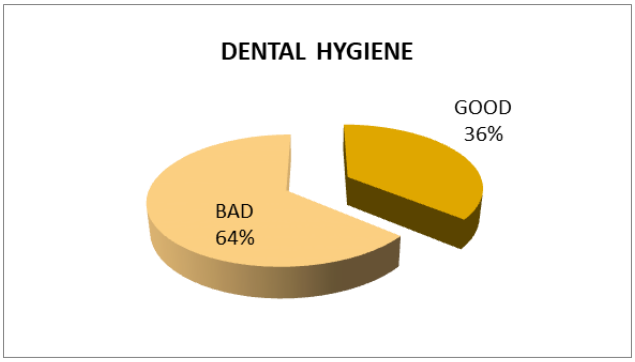

Figure 11: Graphical representation of incidence of DENTAL HYGIENE.

The maximum no. of patients had bad oral care habits i.e 32 patients (64%) whereas only 36% (18) had good oral care habits.

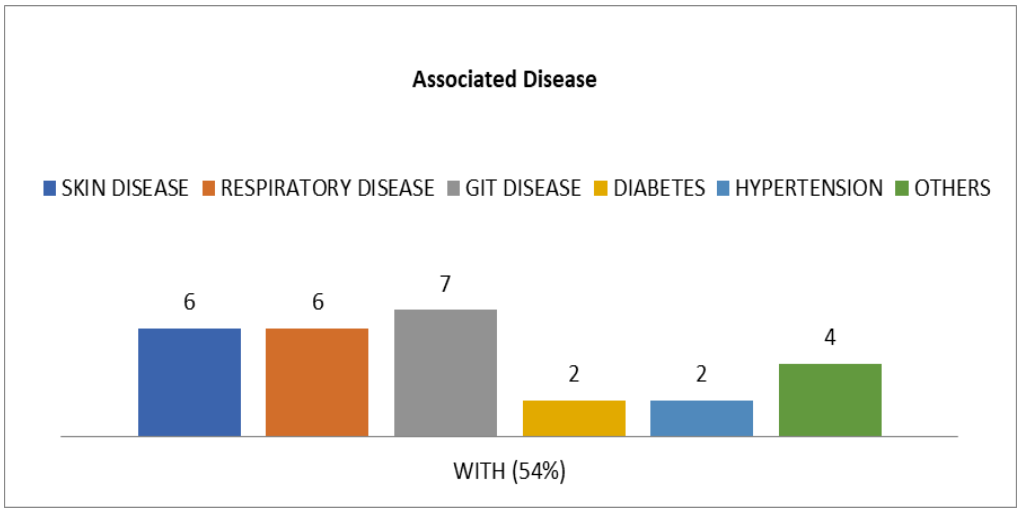

Figure 1: Graphical representation of incidence of addiction habits.

This graph shows percentage of people having some other illness/ disease, usually some systemic illness along with gingivitis – 54% or 27/50. On the other hand, 46% or 23/50 person were suffering with Gingivitis un-associated with any type of illness/disease.

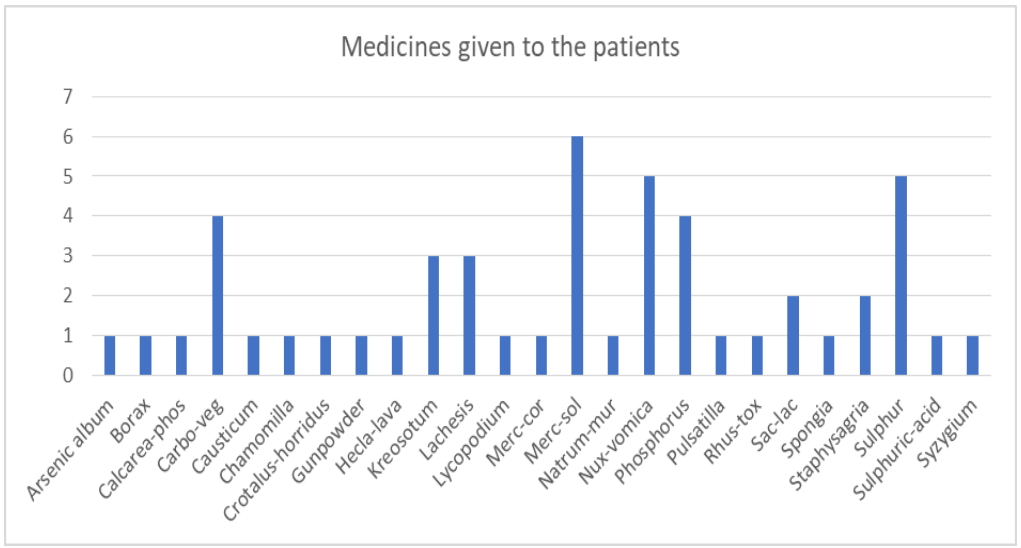

Figure 13: Graphical representation of the incidence of MEDICINE.

This graph shows the names of medicines and number of cases they were administered.

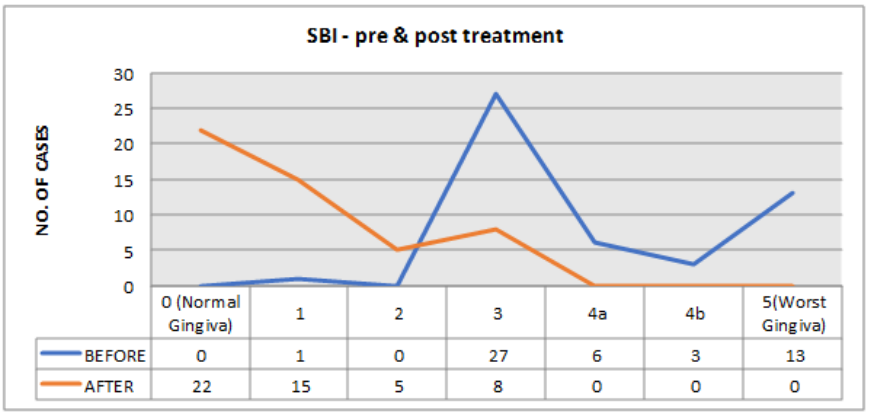

Figure 14: Graphical representation of incidence of SBI scores.

SBI first and final scores indicate management of bleeding in cases of gingivitis and thus according to the graph, there is declination of bleeding index after treatment.

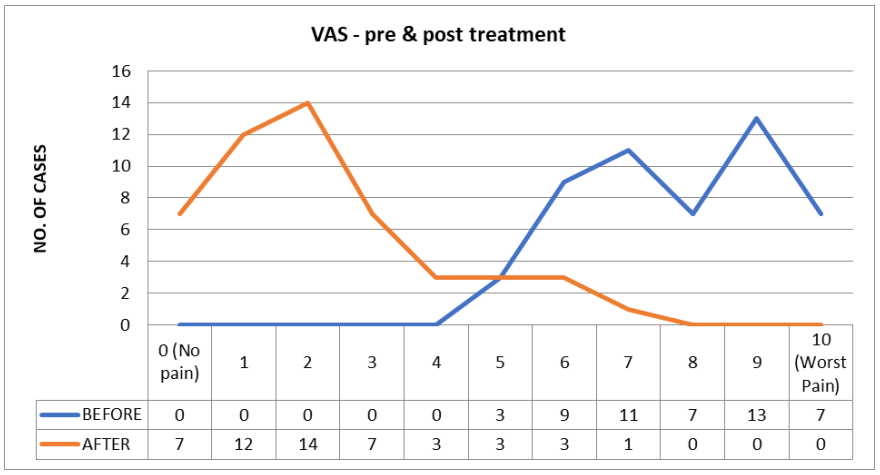

Figure 15: Graphical representation of incidence of VAS scores.

VAS scale indicates Pain management in first and final scores of gingivitis cases and according to the graph there is marked relief after treatment.

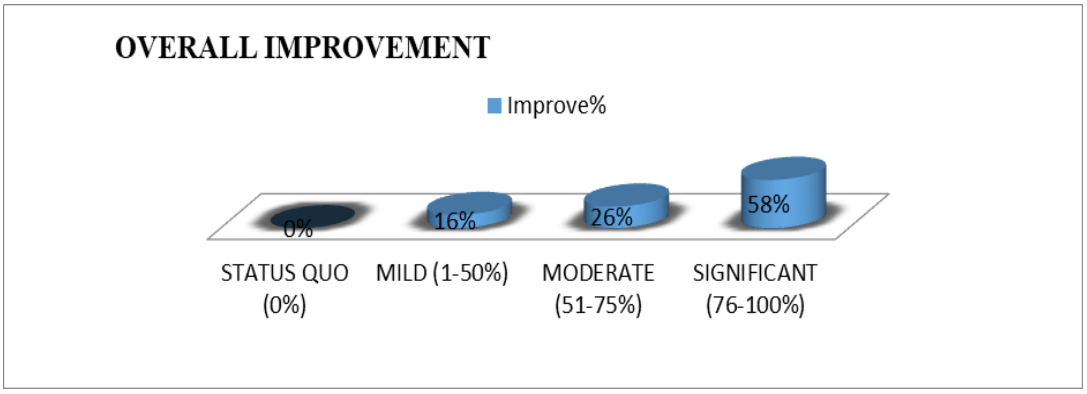

Figure 16: Graphical representation of incidence of overall improvement.

This graph depicts the range of improvement with respect to to mean result of sample size; SQ (no change i.e 0%), MILD (Range =1-50%), MODERATE (Range =51-75%).

STATISTICAL ANALYSIS: A paired t-test was conducted through comparison of pre and post treatment scores, collected from the studied sample of SBI and VAS. The analysis was done on IBM SPSS 20.0.[13]

Table 1: Paired T Test of Pre and Post Score of SBI Scale.

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	SBI pre	3.6600	50	0.93917	0.13282
	SBI post	0.9800	50	1.09712	0.15516

Table 2: Paired T Test of Pre and Post Score of VAS scale.

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	VAS pre	7.78	50	1.516	0.214
	VAS post	2.26	50	1.782	0.252

There was significant difference at the end of study in the scores of both scales -

Table 3: Difference between t_{cal} and t_{tab} for SBI & VAS.

Scale	$t_{calculated}$	$t_{tabulated}$	Result
SBI	20.452	2.021	$T_{cal} > T_{tab}$
VAS	15.330	2.021	$T_{cal} > T_{tab}$

Hereby, in both scales, T_{cal} is more than $T_{tab.}$ Thus, Null Hypothesis (H_0) is rejected at 5% level of significance. And alternate hypothesis (H_1) is accepted after administration of selected individualized homoeopathic medicines in cases of Gingivitis, proving improvement statistically.

DISCUSSION AND CONCLUSION

In the study, majority participants belonged to 31-40year age group (FIG 3), indicating gingivitis commonly affects adult. This observation is consistent with the study of Koffi-Coulibaly NT et al[14] Male participants constituted 64% of sample, which may reflect gender related differences in health seeking behaviour and oral hygiene practices.[15]

A substantial proportion of participants resided in rural area 70% (Fig 4) and belonged to middle socioeconomic class 70% (Fig 6). These findings highlight influence of socioeconomic and environmental factors on oral health. Limited access to dental health

services and inadequate awareness towards oral health contribute to increased burden of gingivitis.[16]

64% of participants reported addiction habits (Fig 8), which may include tobacco or other substances known to affect oral health. Similarly, 64% of participants demonstrated poor oral hygiene habits (Fig 11), reinforcing the established role of plaque accumulation as an etiological factor.[17]

The medicines most commonly prescribed were Mercurius solubus, Nux vomica, Sulphur, Carbo veg and Phosphorus, based on individualized homoeopathic approach (Fig 13). Analysis of outcomes demonstrated decrease in SBI and VAS from 7.78±1.516 to 2.26 ±1.782 and 3.36±0.94 to 0.98±1.09 (Table 1 and Table 2), respectively. This reflects notable clinical improvement ($p<0.05$).

No adverse effects were reported, indicating that individualized homoeopathic medicines were safe. However, lack of control group and relatively small sample size pose limitations to generalizability of these findings. It is advisable to conduct randomized controlled trials with a large sample size and extended follow-up durations to confirm these results and to more effectively delineate role of individualized homoeopathic intervention in management of gingivitis.

CONFLICT OF INTEREST: None.

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