A dull smile has social repercussions. Demand for improved and beautiful smile has become an integral part of dental procedures (AlOtaibi et al., 2020). A large number of people, especially young females are concerned of their smiles and this is because of the reason that the first thing people notice when meeting a new person is their smile (Alshamrani and Wahid, 2018). In the present era, patients are increasingly demanding for a perfect smile due to a shift in priorities and the impact of the media (Hatherell et al., 2011, Pretty et al., 2006).

Materials and Methods

This analytical cross-sectional survey-based study was designed and targeted across Saudi Arabia to measure the level of awareness, knowledge and perception regarding teeth bleaching products amongst the general population in Saudi Arabia in respect to age, gender, level of education and socio-economic factor.

A survey conducted revealed that 25.6% of the dental patients used saline and 10% used lemon as home-based dental whitening agents (Almas et al., 2000). Another study showed that the patients inclined to advertised and home bleaching products compared to professional bleaching (AlOtaibi et al., 2020). The study on the association between age, sex, level of education, marital status, and type of work on the perception and knowledge of patients’ regarding teeth whitening products have also been conducted (Widodo et al., 2018).

Regardless of the benefits of tooth bleaching, sadly, there are evident side effects such as increased tooth sensitivity (Watts and Addy, 2001), irritation of gingivae and mucous membrane (Li, 1996), weakening of the dentin and enamel damage (Haywood et al., 1991), and demineralization of the tooth surface (AlOtaibi et al., 2020). Assuming that most of the population of Saudi Arabia is not aware of the after effect. Therefore, this cross-sectional study aims to evaluate the level of awareness, knowledge and perception regarding tooth bleaching products amongst the general population in Saudi Arabia.
of Saudi Arabia. A modified close-ended questionnaire in Arabic/English language was available for the participants. No personal data except gender, age, and level of education would be collected from the participants.

A modified questionnaire based on research conducted by Alshamrani and Wahid would be designed to meet the research requirements (Alshamrani and Wahid, 2018). The questionnaire would be comprised of three parts:

Part A: four questions related to socio-demographics
Part B: Eight questions related to cause of discolouration and bleaching products’ awareness
Part C: Nine questions related to perception, knowledge about bleaching products and their hazardous effects.

### Statistical Analysis

SPSS software (ver. 21.0; SPSS Inc., Chicago, IL, USA) would be used to analyze the data. Descriptive statistics with frequencies was calculated and tabulated. Chi-square test was performed to compare the level of knowledge among the participants concerning age, gender, and education level. P-values < 0.05 were considered statistically significant.

### Results

A total of 2065 participated in the study. The average age of the study subjects was 20 – 50 years. The number of male and female respondents was 1124 and 941 respectively.

### Table 1: Demographic variables of the study participants

| Variables          | n   | %   |
|--------------------|-----|-----|
| **Age**            |     |     |
| 20-30              | 1327 | 64.3|
| 31-40              | 261  | 12.6|
| 41-50              | 257  | 12.4|
| >51                | 220  | 10.7|
| Total              | 2065 | 100.0%|
| **Gender**         |     |     |
| Female             | 1124 | 54.4%|
| Male               | 941  | 45.6%|
| Total              | 2065 | 100.0%|
| **Education**      |     |     |
| School             | 887  | 43.0%|
| Degree/Diploma     | 254  | 12.3%|
| Post-graduation    | 924  | 44.7%|
| Total              | 2065 | 100.0%|
| **Region**         |     |     |
| Eastern region     | 445  | 21.5%|
| Central region     | 989  | 47.9%|
| Northern region    | 121  | 5.9%|
| Southern region    | 287  | 14.4%|
| Western region     | 213  | 10.3%|
| Total              | 2065 | 100.0%|

### Table: Causes of bleaching and dentist supervised bleaching

|                          | Count | Column N % |
|--------------------------|-------|------------|
| With ageing, discolouration also occurs due to wearing away of the enamel surface? |       |            |
| True                     | 1231  | 59.6%      |
| False                    | 263   | 12.7%      |
| I don’t know             | 517   | 27.7%      |
| The cause of tooth staining could be intrinsic, extrinsic and also age-related? |       |            |
| True                     | 1063  | 51.5%      |
| False                    | 293   | 14.2%      |
| I don’t know             | 709   | 34.3%      |
| Bleaching of teeth under dentist supervision is usually a one-day process |       |            |
| True                     | 857   | 41.5%      |
| False                    | 610   | 29.5%      |
| I don’t know             | 596   | 29.0%      |
| In dentist-supervised bleaching, concentrated bleaching agents are used compared to home-based bleaching products: |       |            |
| True                     | 1387  | 67.2%      |
| False                    | 151   | 7.3%       |
| I don’t know             | 527   | 25.5%      |
### Questionnaire Items

| Question                                                                 | n   | %  |
|-------------------------------------------------------------------------|-----|----|
| Antibiotics such as tetracycline and doxycycline can cause tooth/teeth staining during the developing stage? | Yes | 573 | 27.7% |
|                                                                          | No  | 3   | 0.1% |
|                                                                          | I don't know | 1489 | 72.1% |
| Do you know about teeth bleaching?                                       | Yes | 2051 | 99.3% |
|                                                                          | No  | 14  | 0.7% |
| Are teeth whitening/bleaching possible at home?                         | Yes | 1731 | 83.8% |
|                                                                          | No  | 5   | 0.2% |
|                                                                          | I don't know | 329 | 15.9% |
| Do you think dentist-supervised bleaching is more effective than home bleaching? | Yes | 1840 | 89.1% |
|                                                                          | No  | 14  | 0.7% |
|                                                                          | I don't know | 211 | 10.2% |
| Are there any adverse effects of home-based whitening/bleaching products? | Yes | 1270 | 61.5% |
|                                                                          | No  | 18  | 0.9% |
|                                                                          | I don't know | 777 | 37.6% |
| Are there any adverse effects of dentist’s supervised whitening/bleaching products? | Yes | 1284 | 62.2% |
|                                                                          | No  | 14  | 0.7% |
|                                                                          | I don't know | 767 | 37.1% |
Conclusion

Age and gender are the factors that influence patients’ level of aesthetic satisfaction while educational level had no effect on their aesthetic perception.

Knowledge about tooth discoloration is more concentrated on extrinsic etiologies, and majority of the participants demonstrated poor knowledge about the intrinsic causes of tooth discoloration.

Most patients considered bleaching to be a safe procedure, and their preferred technique is that which is performed at the dental office. Their awareness of potential side effects and post bleaching instructions is acceptable. Their knowledge about the chemicals used and the mechanism of bleaching is poor, and their main source of information about dental bleaching is the media.

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