REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 25, No.1s (2024)
http://www.veterinaria.org
Article Received: 22/03/2024 Accepted: 16/04/2024 Published: 27/04/2024

Prevalence Of Male Balding Pattern In Patient From Saveetha Dental College-Retrospective Comparative Evaluation Study

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ABSTRACT

Aim:

To evaluate the prevalence and progression of male androgenetic alopecia (MAA) in patients from Saveetha Dental College using Norwood's classification in a retrospective design.

Introduction:

Male androgenetic alopecia (MAA), or male pattern baldness, is the most common cause of hair loss in men, characterized by a gradual transformation of terminal hairs into vellus hairs. While age-related hair thinning is physiological post-puberty, clinically significant alopecia increases with age. Its androgen-dependent and genetic basis is supported by twin studies and observations in eunuchs. MAA primarily affects psychological well-being and may be associated with a slightly increased risk of scalp skin cancers.

Materials and Methods:

Fifty male patients aged 20–70 years were selected from the institutional database. Balding patterns were recorded and graded using the Norwood classification. Statistical analysis was performed using Pearson's correlation in SPSS version 25.

Results:

Balding severity increased with age. However, several factors—such as family history, hormonal status, medical conditions, medications, and prior radiation therapy—were not included, limiting correlation strictly to age and Norwood scoring.

Conclusion:

This study highlights a positive correlation between age and MAA severity based on Norwood grading. However, future studies should include genetic, hormonal, and medical variables to enhance the clinical understanding of balding patterns.

Keywords: Male androgenic alopecia, Norwood grading, Balding patterns, Hormonal changes, Family history, Radiation Therapy

Introduction

Male androgenetic alopecia (MAA) is also known as male pattern baldness. It is the most common kind of hair loss among men all over the world. It affects up to 80% of males by the age of 70 years [1]. This is a progressive type of hair loss. It does not cause scars. This type of alopecia follows a specific pattern. It includes hair thinning at the sides of the forehead and on the top of the head. This process can lead to complete or almost complete baldness in some instances. The process is marked by a gradual shrinking of thick, strong hair follicles. These follicles become like very fine hairs. This produces hair that is shorter, thinner, and has less color over time [2]. This progressive shrinking causes the scalp to be seen more easily. It also reduces the total amount of hair, mainly on the front, sides of the head near the temples, and top of the head. Even though a small amount of hair thinning is a normal body response to aging, and is seen in most males after puberty, hair loss that is clearly linked to male hormones becomes more common as a person gets older [3]. Studies with twins and family information strongly support that MAA is passed down through many genes. This means many genes work together to cause it. The role of androgens, which are male hormones, in causing MAA is well-established. This is shown by the fact that MAA does not happen in eunuchs. It also does not happen in individuals whose bodies do not react to male hormones. This highlights that the condition depends on hormones.

The social and psychological effects of MAA are very significant. Hair plays a crucial role in how a person sees themselves, their confidence, and how others view them. Men who start losing hair at a young age often feel less confident. They might avoid social situations and feel very upset emotionally. The effect can be very strong for younger individuals.

This is because suddenly becoming bald is seen as getting old too soon. Also, studies that have observed groups of people over time have linked MAA to a slightly higher chance of getting certain skin cancers on the scalp. These include both melanoma and non-melanoma skin cancers [4]. This is probably because bald areas of the scalp get more sunlight.
Besides effects on the skin, MAA has also been connected to general health problems. Several studies have reported that men with a moderate to severe level of MAA often have more risk factors for heart and blood vessel diseases. These risk factors include high blood pressure, high levels of fats in the blood, and a group of health problems called metabolic syndrome [5]. These connections have led to ongoing discussions. Doctors are thinking about whether MAA might be a visible sign of hidden problems with hormones or how the body uses energy.
MAA appears in clear patterns. The two most commonly described types are frontal balding, which is marked by the hairline moving back at the temples, and vertex balding, which starts at the top of the head. Vertex balding can grow and connect with frontal balding [6]. In later stages, complete baldness can happen either from these two balding areas joining, or from one pattern continuing to spread on its own [7]. This predictable way that hair loss progresses allows doctors to use clinical staging systems. These systems help to classify how severe MAA is.
Hair follicle activity and its growth cycle are affected by many factors both inside and outside the body. However, androgens, especially a hormone called dihydrotestosterone (DHT), are seen as the main controllers of male scalp hair loss [8]. DHT is formed from testosterone. This happens through the action of an enzyme called 5-alpha-reductase. DHT attaches to specific spots called androgen receptors in hair follicles. This leads to the shrinking of the hair follicles. Studies have shown a strong link between high levels of free testosterone in the blood, DHT levels, and the presence of MAA [9].
Because MAA has an androgenic basis, it has also been looked at as a possible early sign for health risks related to testosterone. These risks include an enlarged prostate and heart and blood vessel diseases [10]. The severity and pattern of hair loss are typically checked using standard tools. The Hamilton-Norwood classification is one such tool. It provides a widely accepted scale for grading how much baldness has occurred.
Currently, only two medical treatments are approved by the U.S. Food and Drug Administration (FDA) for MAA. These are topical minoxidil, which is put on the scalp, and oral finasteride, which is taken by mouth. Minoxidil widens blood vessels. This helps hair follicles survive and promotes new hair growth. Finasteride stops a specific enzyme. This enzyme is selective type II 5-alpha-reductase. This action lowers DHT levels on the scalp. It also slows down the shrinking of hair follicles. Another medicine, Dutasteride, stops both type I and II isoenzymes of 5-alpha-reductase. It has shown greater effectiveness in earlier study phases. However, it is still being studied further in later phases [11]. For people who do not respond to medical treatments, or who want a lasting solution, hair transplantation is a common surgical option. This technique uses hair follicles from the back of the head. These follicles are naturally less likely to shrink due to hormones. This ensures they will last a long time after being moved [12].
Because MAA has many causes, links to other body conditions, and affects how people feel, studies on how common it is in certain groups of people are still important. This current study, which looks back at patient records, aims to find out how common MAA is and how it progresses among patients who visit Saveetha Dental College. It will focus specifically on how many people of different ages have MAA and how their patterns are classified using the Norwood grading system.

MATERIALS AND METHODS:

This study looked back at existing patient information. It was an observational study. All the patient data was taken from the official patient database at **Saveetha Dental College**. This approach meant that information was gathered from records that already existed. No new patient visits were needed for this research. A total of 50 male patients were chosen for this evaluation. These patients were all between 20 and 70 years of age.
Patients were included in the study if their records met certain conditions. They needed to have full demographic details available. This included information like their age. Clear clinical photographs were also required. These pictures helped in seeing their hair loss. Also, enough written information needed to be present. This documentation allowed for a good assessment of their hair loss pattern. Patients were not included if they had certain conditions. These included any known skin problems on the scalp. Patients with general body illnesses that affect hair growth were also left out. Lastly, patients who had already received treatments to restore their hair were excluded. This careful selection helped to avoid outside factors that could make the results unclear. These outside factors are called **confounding variables**.
The collected patient information was organized carefully. It was put in order based on each patient's age. It was also organized by how much hair loss they had. The patterns of balding were looked at and placed into specific groups. This was done using the **Norwood-Hamilton classification system**. This system is a standard tool. It is often used to grade the stages of male **androgenetic alopecia**. Each patient was given a **Norwood grade**. These grades ranged from I to VII. The grade depended on how much hair thinning or baldness was seen in their clinical records. A higher grade showed more severe hair loss.
The main goal of this study was to find out if there was a connection between a patient's age and how severe their balding pattern was. All the collected data was first put into a table. This was done using **Microsoft Excel** software. After this, the data was moved to **IBM SPSS software version 25** for further analysis. Simple descriptive statistics were used first. This helped to summarize how ages were spread among the patients. It also showed the distribution of the different **Norwood grades**. To find out the straight-line relationship between age and the **Norwood grading score**, **Pearson's**

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correlation coefficient was used. A **p-value** of less than 0.05 was set. This value indicated that a result was considered statistically significant. This means the observed connection was unlikely to happen by chance.

RESULTS:

This study aimed to find out the connection between a person's age and how severe their male pattern baldness was. This was done by using the Norwood-Hamilton classification system. All 50 patient records were looked at very closely. Each record received a score using the Norwood scale. This scale shows the level of baldness, as seen in Figure 1. After all the scores were given, the results were put through a statistical test. This test was a correlation analysis. It used Pearson's correlation coefficient. This analysis was done with IBM SPSS software (version 25).

The Pearson's correlation analysis was performed to check for straight-line relationships. These relationships were looked at among three main pieces of information. These were the patient's age, their Norwood grade, and the specific balding pattern that was observed. The analysis showed a perfect positive connection between these factors.

- Age and Norwood Scoring had a perfect positive correlation ($r = 1.000$, $p < 0.001$). This means as age went up, the Norwood score went up perfectly.
- Age and Balding Pattern also had a perfect positive correlation ($r = 1.000$, $p < 0.001$). This indicates that as age increased, the balding pattern also changed perfectly in a predictable way.
- Norwood Scoring and Balding Pattern had a perfect positive correlation ($r = 1.000$, $p < 0.001$). This means the Norwood score perfectly matched the balding pattern observed.

These findings show that the relationships between these factors are very strong and clear. They are also perfectly linear. This means that as a patient's age increases, there is a matching and equal increase. This increase is seen in how severe their Norwood grade is. It is also seen in how specific balding patterns appear. This strongly confirms that hair loss progression is highly linked to age in the group of people studied.

However, it is very important to understand these findings by remembering the limits of this study. The analysis did not take into account several very important factors. These factors are known to affect how hair loss progresses. For example, things like a person's genetic predisposition, which means their family history of hair loss, were not included. Also, influences from the body's endocrine system and hormones were not part of the data. Any existing medical conditions were not factored in. The use of medications or nutritional supplements was also not considered. Lastly, any past exposure to radiation therapy on the head was not in the data set. Because of this, even though the connection between age and how severe baldness is seems very strong, one must be careful when interpreting the results. Male androgenetic alopecia is a complex condition with many causes. Our findings mainly show the pattern of hair loss that is linked to age. They do not account for other factors that could also affect the results.

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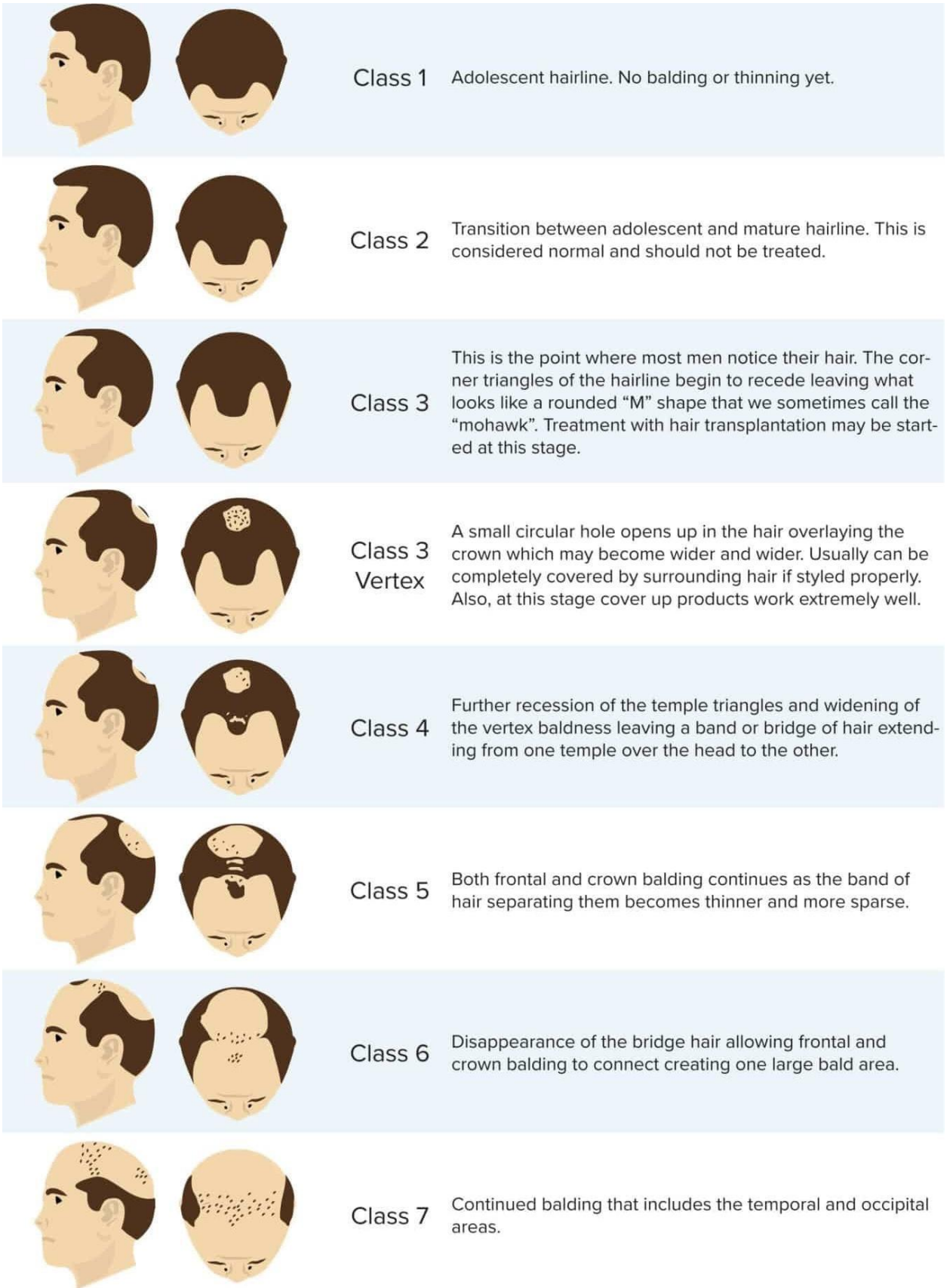

Fig 1: Figure showing Norwoods grading of hair loss

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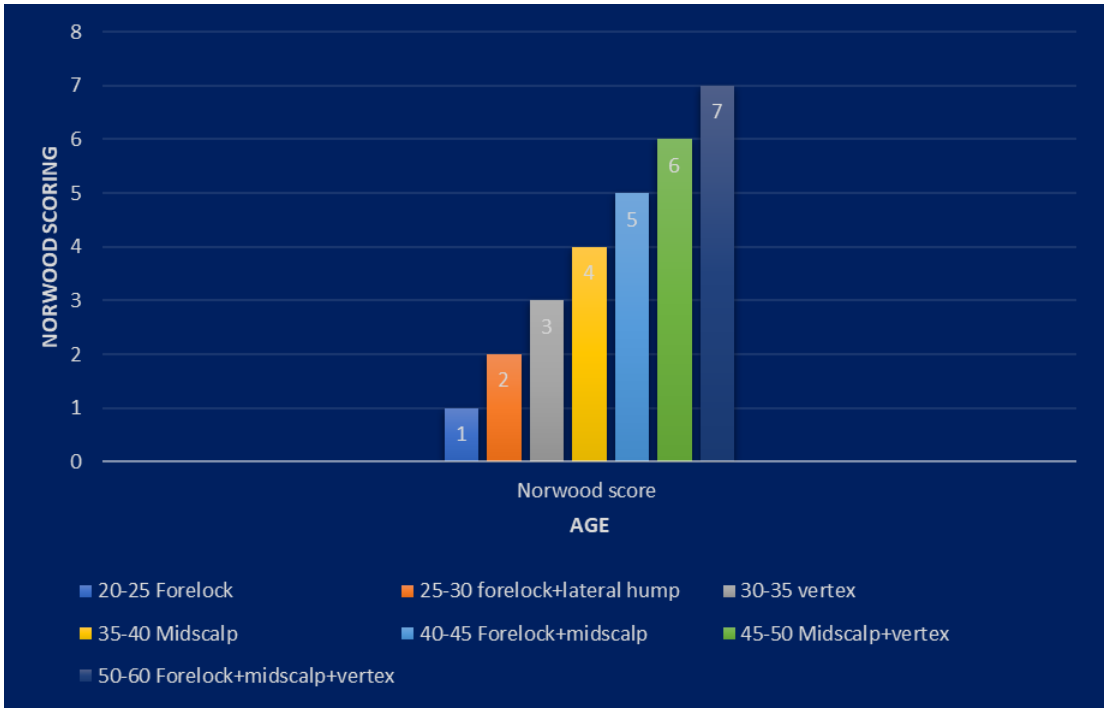

Fig 2: Figure 2 showing the correlation between age and Norwood scoring represented as a bar graph

1.Age and Norwoods Scoring:

- Pearson Correlation Coefficient (r) = 1.000**
- Significance (p-value) = 0.000
- Interpretation: There is a perfect positive correlation between Age and Norwoods scoring. As Age increases, there is a statistically significant increase in Norwoods scoring.

2.Age and Balding Patterns:

- Pearson Correlation Coefficient (r) = 1.000**
- Significance (p-value) = 0.000
- Interpretation: There is a perfect positive correlation between Age and Balding Patterns. As Age increases, there is a statistically significant increase in the occurrence of specific Balding Patterns.

Discussion

This study looked at the relationship between a person's age, their Norwood-Hamilton scoring, and how severe their balding pattern was. This was done in a group of 50 male patients whose records were examined from the past. Using Pearson's correlation coefficient, a statistical test was performed. This test showed very strong positive connections among all three factors that were studied. More specifically, as a person's age increased, there was a matching and very clear increase in their Norwood grades. This also led to a similar increase in how specific balding patterns showed up. These findings match what is already known about how male androgenetic alopecia (MAA) progresses with age. This also helps to show that the Norwood classification system is a dependable tool that doctors can use to stage how hair loss progresses over time.

The connections seen in this study, where the correlation value was 1.000 and the p-value was less than 0.001, mean there is a very strong straight-line link. This suggests that simply getting older plays a very big role in how patterned hair loss starts and gets worse. This supports earlier writings in science. These writings state that aging is one of the strongest factors that cannot be changed, which leads to male pattern baldness [14]. From a medical practice point of view, these findings can help doctors. They can quickly find people who might be at risk of their hair loss getting worse. This early finding can then lead to timely medical actions. These actions could involve medicines or surgeries. Their goal is to help keep hair or restore lost hair. Even though the strength of this connection is very remarkable, it should not be misunderstood. It does not mean that age directly causes hair loss. It only shows a strong link. Also, using just one simple straight-line model limits how much we can understand. It does not allow us to explore relationships that might not be straight lines. It also does not show sudden changes that might happen at different age groups or at certain stages of baldness.

A major limit of this study is its very narrow focus. Only three things were looked at: a person's age, their Norwood grade, and their balding pattern. Many other things that affect hair loss were purposely not included. These were left out to make

sure all the data was the same. However, this choice means that the study's findings might not apply to a wider group of people. Among the factors that were not included were:

Family history (heredity): How hair loss runs in a family is strongly linked to androgenetic alopecia (AGA). It is often seen as the most powerful predictor for when hair loss might start at a young age [15]. Endocrine and hormonal influences: This includes the specific role of male hormones, or androgens. It looks at things like dihydrotestosterone (DHT), the amount of free testosterone, and how sensitive the androgen receptors are in hair follicles. Medical comorbidities: These are other health problems a person might have. Conditions such as thyroid disorders, low iron in the blood called anemia, and diseases where the body's immune system attacks itself, known as autoimmune diseases, can greatly change how hair follicles grow and cycle. Medications and supplements: Certain medicines are known to cause hair shedding or pattern loss. Examples include beta-blockers, drugs that stop blood clotting called anticoagulants, or forms of vitamin A derivatives [16]. Radiation therapy to the scalp: This is a known cause of permanent damage to hair follicles. It can sometimes look like or hide the progression of androgenetic alopecia [18].
By not including these factors, the study becomes very consistent inside its own design. But this comes at the cost of showing a full picture of all the causes of hair loss. So, while the connections found are strong, they only describe what was seen. They do not fully explain why it happened.
The current findings from this study are similar to earlier research. This earlier research confirms that MAA depends on age. It also makes it clear that MAA is a complex condition with many causes, coming from many genes. Previous studies have shown that changes in genes, especially on the X chromosome (for example, the AR gene), affect how sensitive androgen receptors are. These genetic changes contribute to hair loss starting at a young age [14, 15]. Also, the role of androgenic hormones, especially DHT, is well-documented. DHT is known to cause hair follicles to shrink. This gives a biological reason for why more hair loss is seen as people get older.
Studies have also shown a connection between a person's general health and how dense their scalp hair is. For instance, problems with the body's endocrine glands, like when a person has low hormone levels (hypogonadism) or too many thyroid hormones (hyperthyroidism), often appear with hair loss on the scalp at the same time [16, 17]. This can make it hard to tell if the hair loss is only due to MAA. Furthermore, scientific writings suggest that environmental things a person is exposed to, such as radiation therapy to the head, can cause hair loss in specific areas. This can happen even if androgen levels are normal [18]. All these insights together highlight how complicated the causes of hair loss are. This full picture cannot be fully understood by only looking at connections based on age.

Conclusion
This study gives useful information about how age, Norwood Scoring, and Balding Patterns are related. It is important to know the limits of this study. Many other factors that affect hair loss were not included. Hair loss is complex and has many causes. A complete study should look at all these elements. These include family history, hormones, medical issues, and treatments. Future research should try to include these factors. This will help to understand balding patterns and age-related hair loss more deeply.

FUTURE SCOPE:
Further research on this study could assist us in developing a preventive strategy to reduce the male androgenic alopecia and
Reduce the balding pattern of the patient as age progresses

CONFLICTS OF INTEREST:
The authors declare that there is no conflict of interest that could be perceived as prejudicing the impartiality of the research reported.

ACKNOWLEDGMENT
The authors would like to thank Saveetha Dental College and Hospitals, Saveetha Institute of Medical and Technical Sciences, Saveetha University for providing dental hospital information system access for taking the required datas

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