



Introduction to Dentistry

Orthodontics & Pediatrics

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At the end of this lecture, the students will be able to:

- Define orthodontics and pedodontics
- Appraise the relation between orthodontics and other dental diseases
- Identify the demands for orthodontic treatment
- Recognize the possible disadvantages of orthodontic treatment
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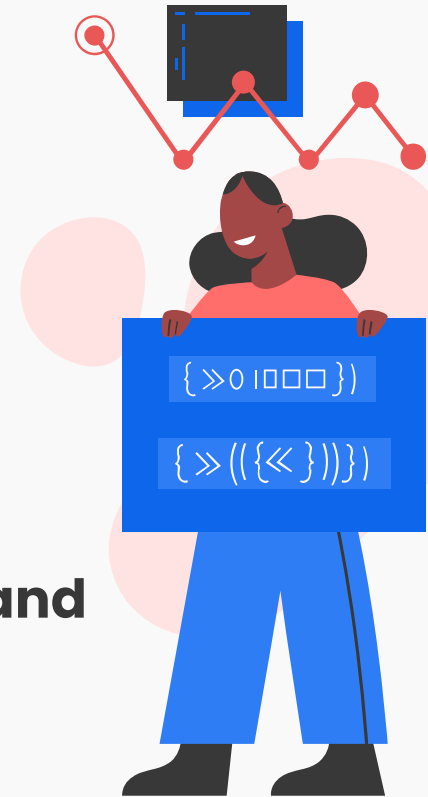
Demands for
orthodontic
treatment

02

Relations between
orthodontics and
other dental
diseases

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The disadvantages and
potential risks of
orthodontic
treatment



A



01

Orthodontics





Orthodontics



[] A branch of dentistry concerned with facial growth, with development of the dentition and occlusion, and with the diagnosis, interception, and treatment of occlusal anomalies.





Prevalence of malocclusion

UK child dental health survey 2003



8 %

Children undergoing orthodontic treatment at the time of the survey

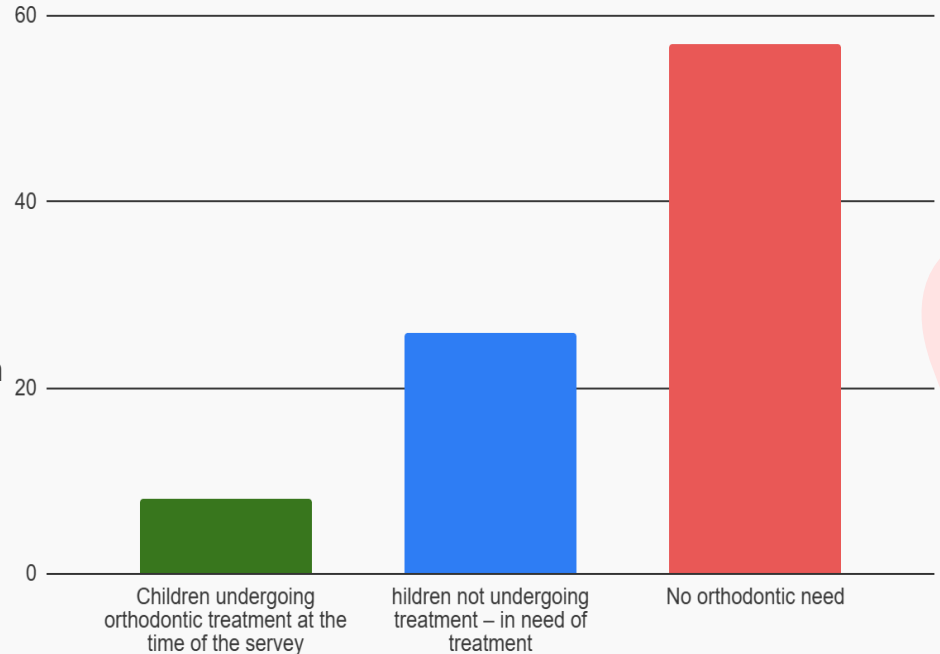


26 %

Children not undergoing treatment – in need of treatment

57 %

No orthodontic need



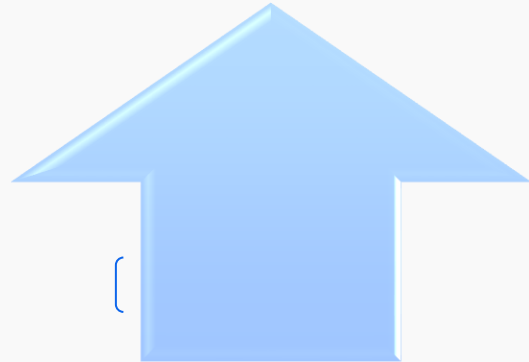
The need for treatment



Worsening of dental health (e.g. caries)
Failure to achieve aims of treatment



Improved function
Improved aesthetics
Psychological benefits



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02

**Relations between
orthodontics and
other dental
diseases**

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Dental Caries

Children which have malalignment of teeth possess reduced potential for natural tooth-cleansing and increase the risk of caries



Periodontal diseases

Good tooth brushers are motivated to brush around irregular teeth, whereas in the individual who brushes infrequently their poor plaque control is clearly of more importance.



Speech problems

« If a patient cannot attain contact between the incisors anteriorly, this may contribute to the production of a lisp (interdental stigmatism).



Tooth impaction

- ⇐ Unerupted impacted teeth, for example maxillary canines, may cause resorption of the roots of adjacent teeth.



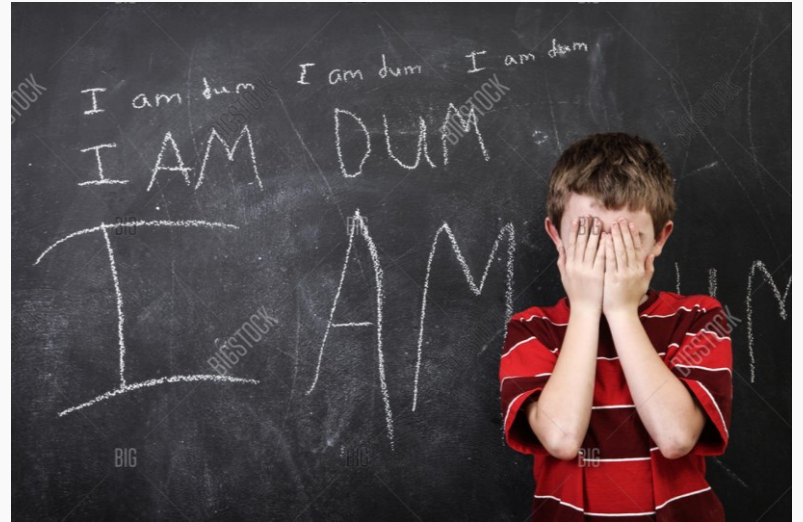
Psychological and social effect of malocclusion

Self-Esteem

Individuals with malocclusion may experience lower self-esteem due to self-perceived appearance

Quality of life

Good oral health is associated with overall psychological and social well-being



Factors influencing the psychological impact of malocclusion

Severity

The impact varies based on the severity of malocclusion



Factors influencing the psychological impact of malocclusion

Age, Gender, and Ethnicity

These factors influence how malocclusion affects an individual's psyche



Factors influencing the psychological impact of malocclusion

Socioeconomic Status

These factors influence how malocclusion affects an individual's psyche



03

Demands for orthodontic treatment



The awareness of tooth alignment and malocclusion, and willingness to undergo orthodontic treatment, are greater in the following groups:

- Females
- Higher socio-economic families/groups
- In areas which have a smaller population to orthodontist ratio





The demand for treatment has also been elevated by the increased availability of less visible appliances



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04

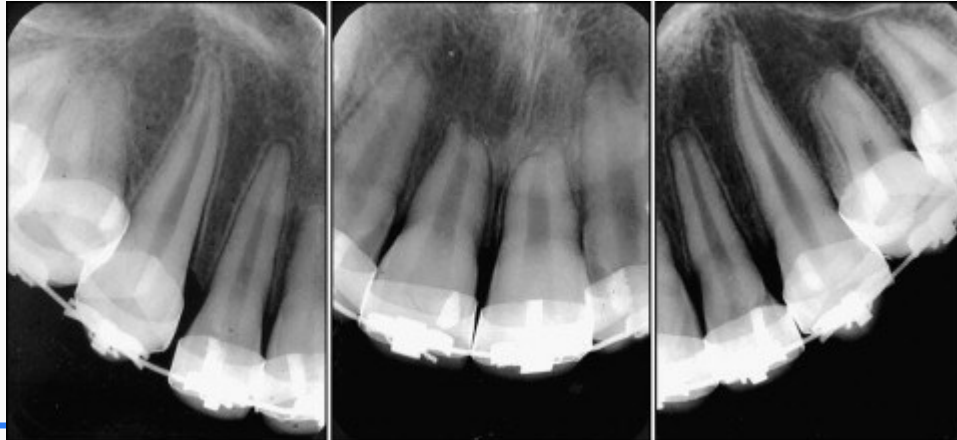
The disadvantages and potential risks of orthodontic treatment

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Root resorption

Patients appear to be more susceptible and undergo more marked root resorption:

- Shortened roots with evidence of previous root resorption
- Pipette-shaped or blunted roots
- Teeth which have suffered a previous episode of trauma
- Iatrogenic – use of excessive forces; intrusion; prolonged treatment time



Loss of periodontal support

- Reduced access for cleansing following the placement of fixed appliances, leads to an increase in gingival inflammation.
- This normally reduces or resolves following removal of the appliance.
- In most patients this is minimal, but if oral hygiene is poor, more marked loss may occur.
- **Management of risk:** Improve oral hygiene. Avoid moving teeth out of alveolar bone



Demineralization

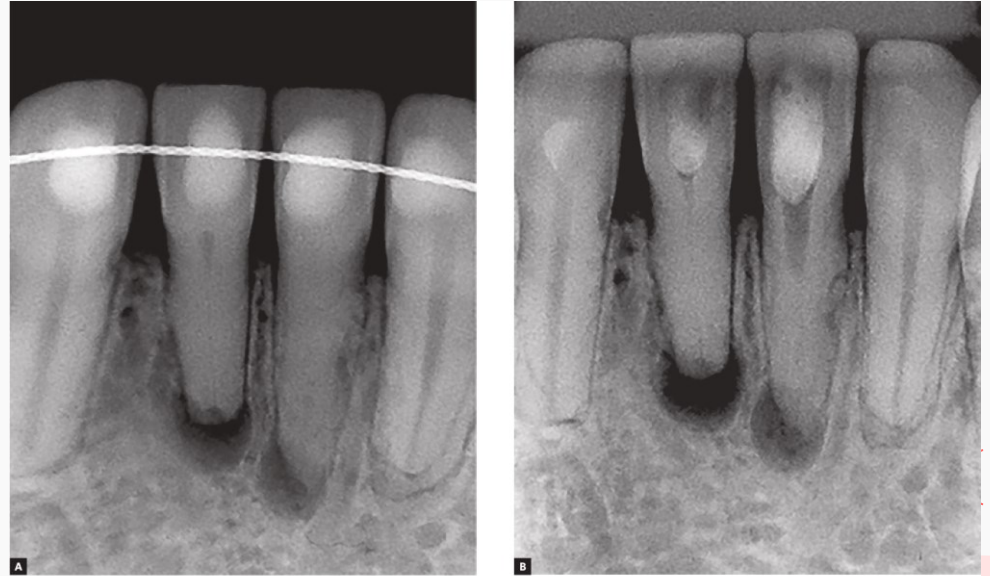
- Caries or demineralization occurs when a cariogenic plaque occurs in association with a high-sugar diet.
- The presence of fixed orthodontic appliances predisposes to plaque accumulation as tooth cleaning around the components of the appliance is more difficult.
- **Management of risk:** Dietary advice, improve oral hygiene, increase availability of fluoride



Pulpal injury

◀◀ • An excessive amount of apical movement may result in pulpal mortality or a decrease in blood flow to the pulp.

[] **Management of risk:** If history of previous trauma to incisors, counsel patient



Failure to achieve treatment objectives

Operator factors	Patient factors
Errors of diagnosis	Poor oral hygiene/diet
Errors of treatment planning	Failure to wear appliances
Anchorage loss	Repeated appliance breakages
Technique errors	Failed appointments

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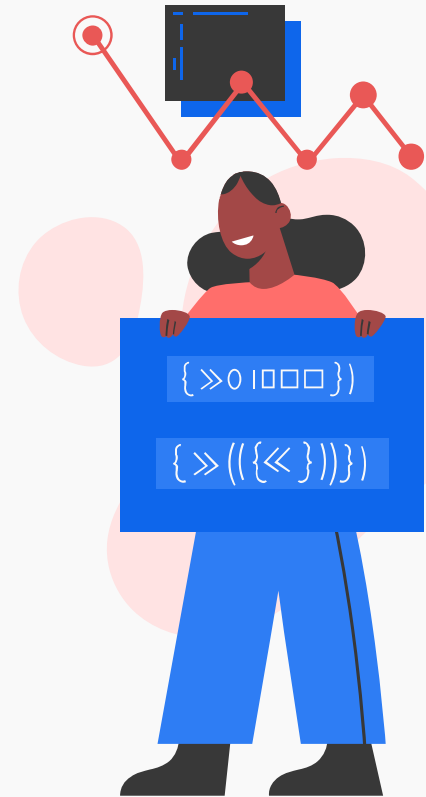
History of
Pedodontics

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Importance of
deciduous teeth

04

Objectives of
Pedodontics



B



01

Pedodontics



Pedodontics (American Academy of Pediatric Dentistry)

An age-defined specialty that provides both primary and comprehensive preventive and therapeutic oral health care for infants and children through adolescence, including those with special health care needs (AAPD).



02

History of Pedodontics



- 1737: Gerauldy wrote theories of teeth eruption and exfoliation
- 1763: Joseph Hurlock publishes a book about children's dentistry
- 1764: Robert Bunon (**Father of Pedodontics**) establish the importance of deciduous teeth
- 1865: The first children dental clinic was opened at Strasburg, Germany



ROBERT BUNON
1702-1748

- 1926: Detroit Pedodontics Study club started by Dr. Samuel D Harris (Father of children's dentistry organizations worldwide)
- 1947: American Academy of Pedodontics was established
- 1984: American Academy of Pedodontics was named American Academy of Pediatric Dentistry



03

Importance of deciduous teeth



Development of the Oral Cavity:

- Deciduous teeth help in the development of the oral cavity.
- They maintain the proper arch length within the jaw and provide a guide for the pathway of permanent teeth that begin to erupt.



Mastication

- They allow proper mastication, which is essential for digestion.



Space maintenance

- They maintain a place for the permanent teeth.
- Premature loss of deciduous teeth can lead to a lack of space, which is a significant factor in the development of malocclusion.



Facial Appearance

- Deciduous teeth contribute to forming the proper and normal face appearance.



Speech Development

- They ensure a clear speech pattern. The positioning of the teeth can affect the way sounds are formed.



04

Objectives of Pedodontics



1. Early diagnosis and promote treatment

- Introduce and implement the principles of preventive dentistry for early diagnosis of any dental problem.
- Early diagnosis of developing malocclusion is essential to prevent complications and allow for early interception.



2. Observation of developing dentition

- The general practitioner should call the child for dental visit at regular intervals to monitor the development of oral structures and refers the child to specialist if needed.



3. Restoration of damaged teeth

- Restoration of damaged or lost teeth maintain the harmony between soft and hard tissues.



4. Increase the dental health care knowledge

- The dental visits in the childhood period would increase the child awareness about how to care of his/her teeth.



5. Management of special patients

- Managing the physically and mentally compromised children in an efficient way to avoid complications and maintain general health of the child.



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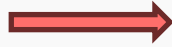
05

Patient assessment in Pedodontics



Patient assessment in Pedodontics

History taking



Medical history

- Cardiovascular disease
- Central nervous system disorders
- Endocrine disorder (e.g. diabetes).
- Gastrointestinal tract (e.g. hepatitis).
- Respiratory tract disorder (e.g. asthma, bronchitis, upper respiratory tract infections).
- Bleeding tendencies (include family history of bleeding problems).
- Urogenital system (renal disease, ureteric reflux).
- Allergies.
- Past operations or treatment/medications

Patient assessment in Pedodontics

History taking

Dental history

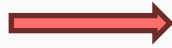
- Previous treatment (Child attitude).
- Eruption times and dental development.
- What preventive treatment has been undertaken previously.
- Methods of pain control used previously.

Growth and development

- Developmental milestones.
- Speech and language development.
- Motor skills.
- Socialization

Patient assessment in Pedodontics

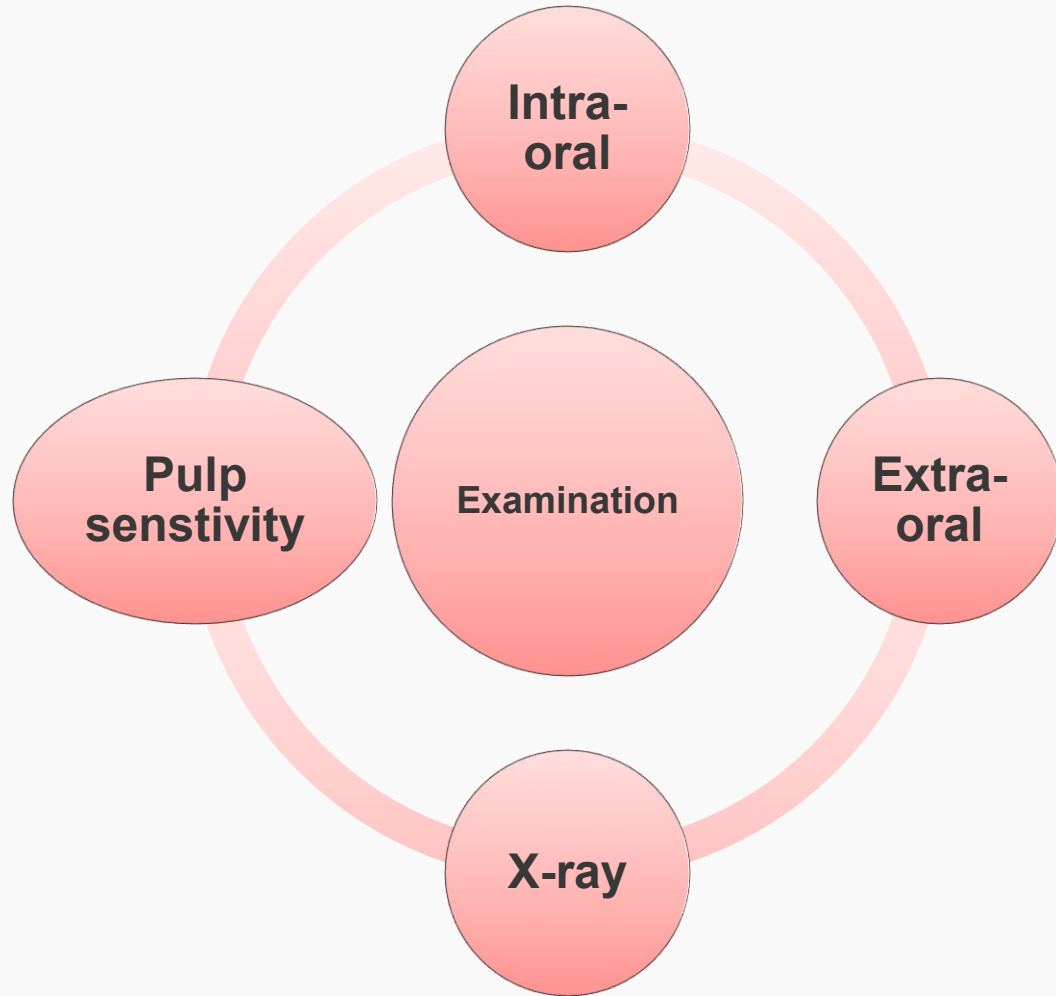
History taking



Family and social history

- Family history of serious illness.
- Schooling, performance in class.
- Speech and language problems.
- Pets/hobbies or other interests





Intra-oral

**Pulp
sensitivity**

Examination

Extra-oral

X-ray



Assessment of disease risk



This assessment should be based on:



Past disease experience



Current dental status



Diet considerations



Concomitant medical conditions

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- Three or more new lesions per year.
- Orthodontic treatment.
- Chronic illness or hospitalization.
- Medically compromised children.

- One or two new lesions per year.

- No caries present.
- Favorable family history
- Good oral hygiene.
- Access to community water fluoridation.

High risk

Moderate risk

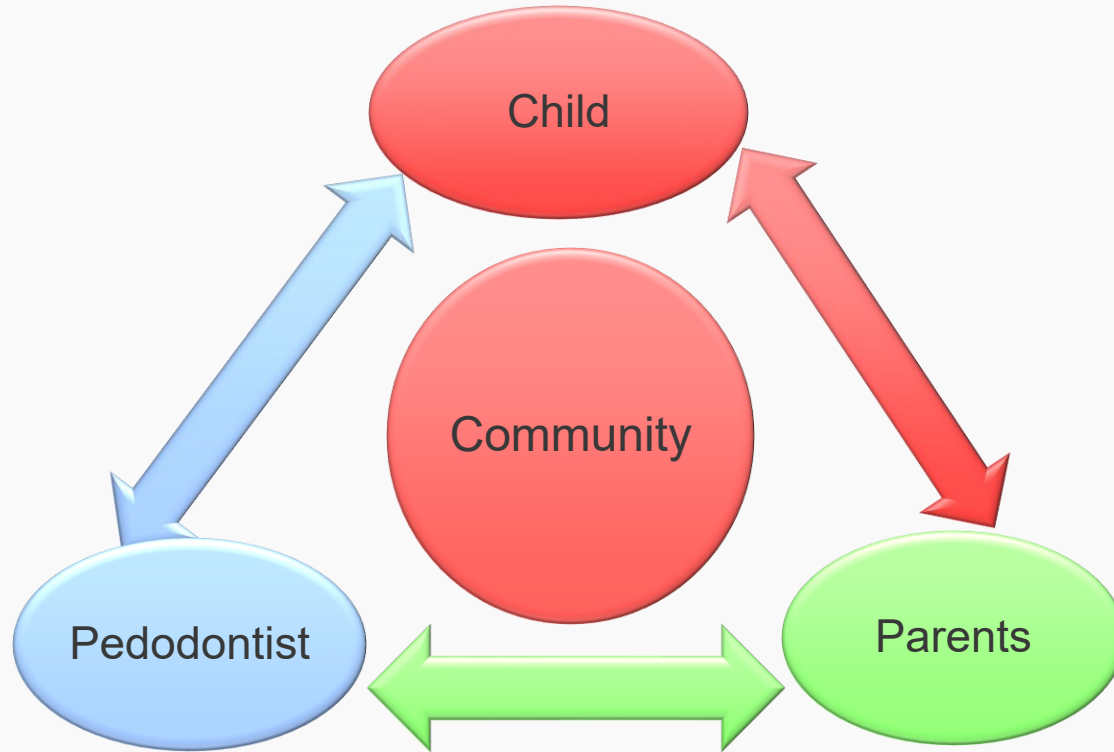
**Low risk of
disease**



Pedodontics treatment triangle



Modified pedodontics triangle

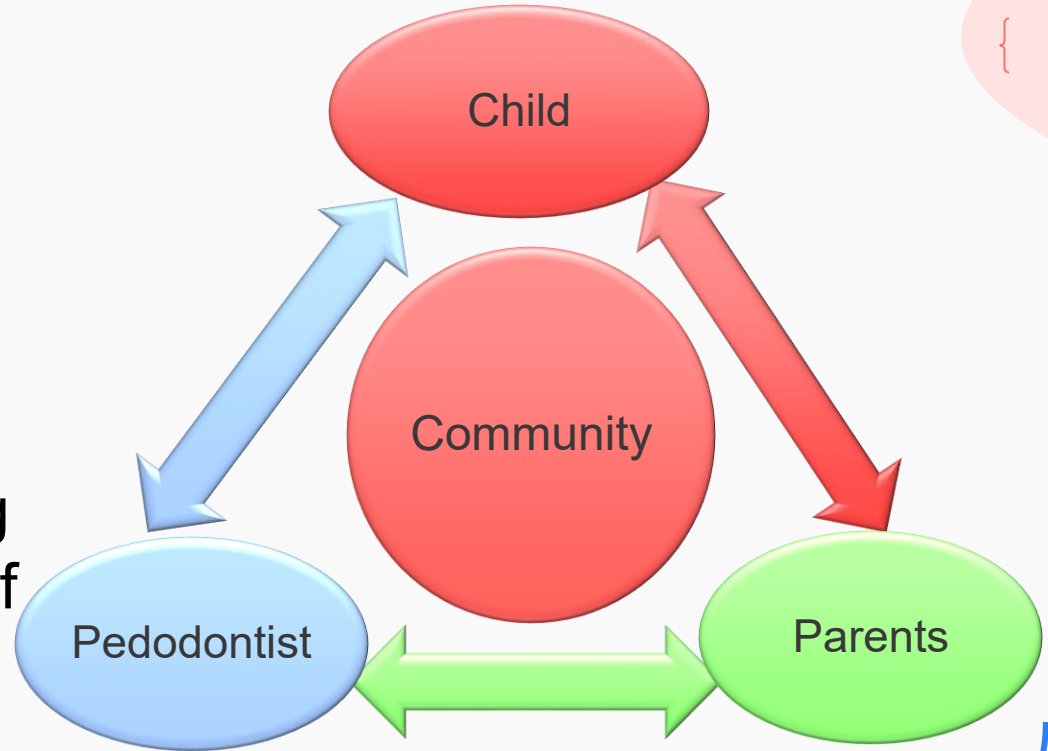


Modified pedodontics triangle

Authoritative parents (Isosceles triangle)

The parent interfere in the conversation relation between the child and Pedodontist.

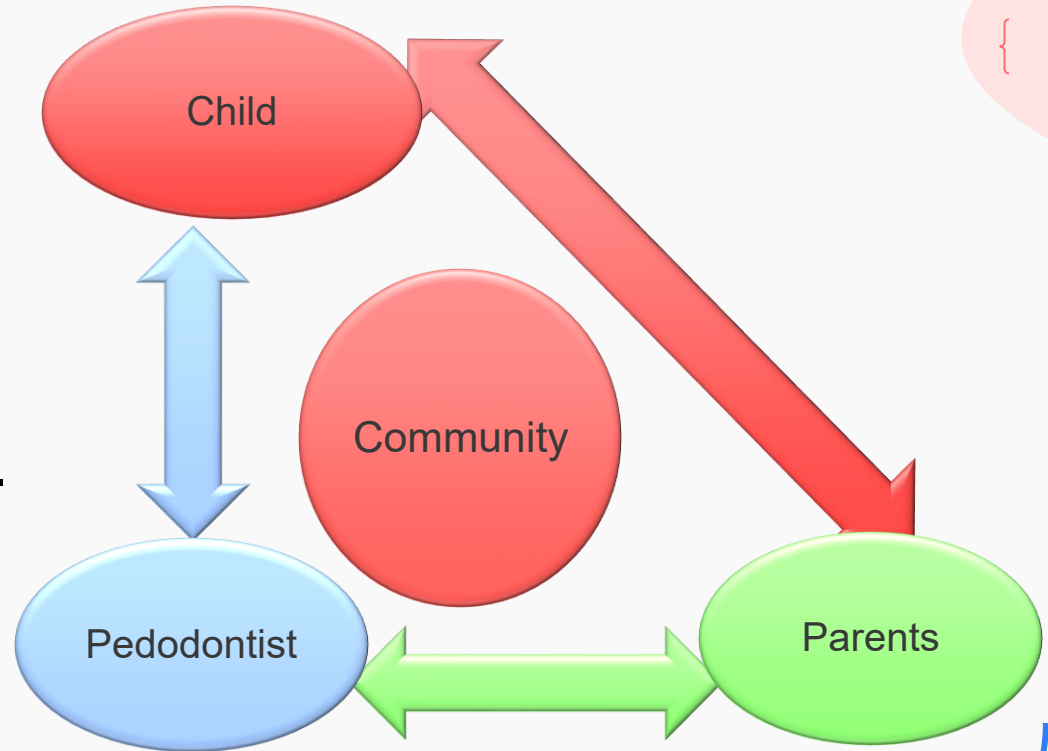
The parents are answering the questions on behave of the child



Modified pedodontics triangle

Neglecting parents (Right angle triangle)

Little, if any, parents' interception between the child and the Pedodontist.



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***Thank
you***

References

- Cameron AC, Widmer RP. Handbook of pediatric dentistry. 3rd ed. 2008, Mosby, Elsevier.
- Kotsanos, N., Sarnat, H., Park, K. (2022). Pediatric Dentistry: Past, Present, and Future. In: Kotsanos, N., Sarnat, H., Park, K. (eds) Pediatric Dentistry. Textbooks in Contemporary Dentistry. Springer, Cham. https://doi.org/10.1007/978-3-030-78003-6_1
- 1. Pedodontics | Definition & Practice. Encyclopedia Britannica, <https://www.britannica.com/science/pedodontics> (1998).