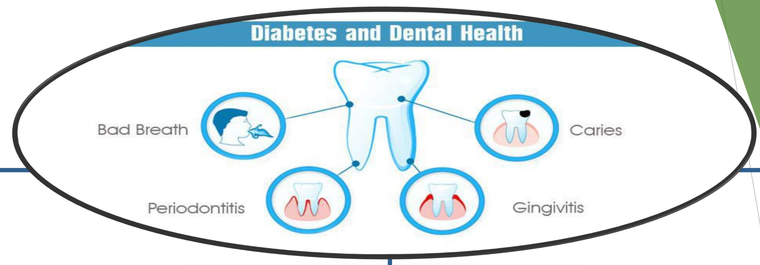
Diabetes and Periodontal Health



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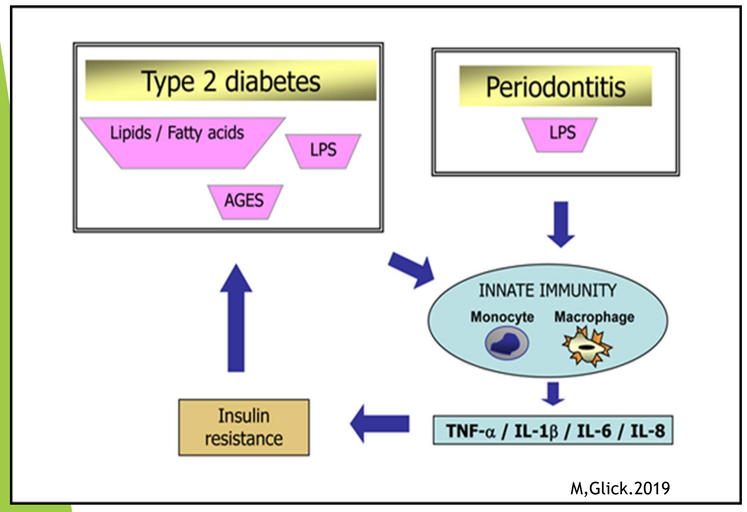
Introduction
- It is estimated that 4 million people in the UK have diabetes. (NHS,2020)
- Type two diabetes is when the body doesn't produce enough insulin, or the cells don't react to the insulin. (diabetes prevalence,2019)
- Periodontitis Is an inflammatory disease that affects the hard and soft structures of the periodontium (S, Noble.2012)
- This poster will review evidence to determine if periodontal disease and diabetes are linked and how they are linked.

Method
- Researched Periodontal and diabetic systemic connection using Cardiff University library, and on-line resources.

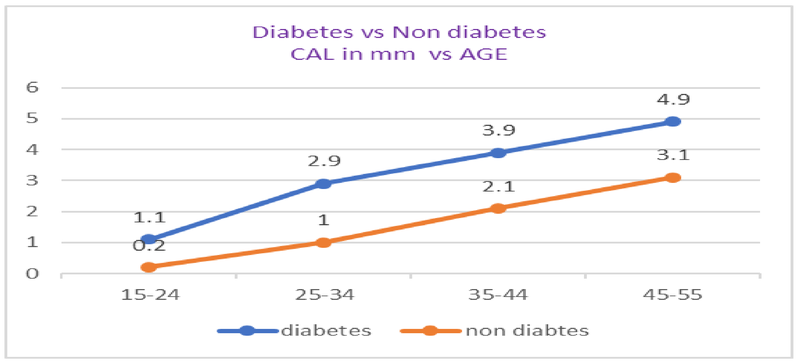
Aim
- Create awareness to dental student
- Use evidence based research to prove how there is a direct link between type two diabetes and periodontal disease.

Objective
- Explore and identify underlying factors that link these two conditions together.



M,Glick.2019

Evidence
- Demmer Et Al analysed 1,188 subgingival plaque samples from diabetic free adults aged 20-55. Certain bacteria found within the subgingival plaque samples was associated with changes in blood glucose levels, putting the individuals at greater risk of developing diabetes. (M, Glick,2019)
- In 2017,1,331 men aged 58-72, initially free of diabetes underwent periodontal examinations and monitored over a duration of 7 years. Out of the 1,331 men, 80 of them developed diabetes. 70% of the men that presented with moderate periodontal disease, at initial examination, were at greater risk of developing diabetes when compared to the men that presented with no/mild periodontitis. (M, Glick.2019)
- Dr Thomas Beikler discovered that TNH alpha, an inflammatory mediator, impairs and disrupts intracellular insulin signalling which may lead to insulin resistance. (M, Glick.2019)



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Discussion
- Bacteria left on the supporting structures of the periodontium creates an immune response, producing neutrophils to phagocytose the pathogens.
- A patient with diabetes, is at risk of developing periodontal disease due to the impaired neutrophil function;
- Bacteria is able to metabolize and cause destruction to the periodontal structures and can affect glycaemic control. (S, Noble.2012)
- A clinical sign of periodontal disease in the mouth is the clinical attachment loss (CAL) of the periodontium; Diabetic patients are shown to present with an increased CAL measurement. (M,Glick.2019)
- Glucose in the blood interacts with protein and lipids causing a reaction called Glycation. (M,Glick.2019)
- Hyperglycaemia causes early Glycation resulting in macrophage activation and intramolecular rearrangement; causing poor regulation of the adhesion molecules. (M, Glick.2019)
- Adhesion molecules are responsible for recruiting white blood cells to the source of infection.(NCBI,2007)
- Advanced glycation, due to poorly controlled blood sugar, increases macrophage activation, that produces inflammatory cytokines and reactive oxygen species that increase periodontal destruction. (M, Glick.2019)
- TNH alpha an inflammatory mediator is linked to insulin resistance, putting patients at risk of developing diabetes .

Conclusion
- Patients with diabetes are at an increased risk of developing periodontal disease.
- Poor oral health is associated with changes in blood glucose levels in a non-diabetic patient, making them at risk of developing the diabetes.
- Every individual should have regular dental examinations .

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