Periodontology lecture #3

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We already discussed in the previous lectures the classification of periodontal diseases, and we made it clear that the most common prevalent disease in the world is **Chronic Gingivitis** and the next most prevalent disease is **Caries**, and the third most prevalent is **Chronic Periodontitis**. We were presented with several types of chronic gingivitis and we took the etiology of the disease. And then we talked about acute type of gingivitis and its etiology. We have also learned about another disease called Aggressive Periodontitis.

*-How did we know that the most prevalent disease in the world is chronic gingivitis?*

Now If I count the class I would find 60% females and 40% males, I can examine all candidates and check if they have gingivitis, number of carious teeth, number of fillings and so on and then eventually come up with results; that 35% of the population (the class) have chronic gingivitis, 1% have periodontitis,90% have carious teeth, and 60% have fillings. This is what ***epidemiology*** is.

Epidemiology; is a Greek word that means observation upon people like what we just did in the example above.

We all are in one class and we all are in our fourth year, which means we have a common factor among us, however upon investigation we have haphazard findings. So the science that take haphazard observations and explain the results and put them in meaningful results; explain why these results were haphazard is called *Epidemiology*.

So again, Epidemiology the branch of scientific inquiry that seeks to find order among seemingly haphazard pattern of a disease in a population.

Again, the definition of Epidemiology is the study of health and disease. How can we tell if this person is diseased or healthy, we should have comparison. We have to compare between two subjects, so studies is what give us the conclusion of health and disease among population.

Epidemiology is the study of health and disease in populations and of how these states are influenced by hereditary, biology, physical environment, social environment and ways of living.

If we brought two persons (that we don’t know if they’re diseased or not) and we examine their oral cavity, (sometimes there are people that are said to be prone to caries even if he brushes his teeth, or he has diabetes and we find his parents having it too so this is hereditary) so this person is diseased not because he neglected his health but because he has an x factor contributing genetically to the disease that he has. So most diseases are related and correlated directly to hereditary, biology, physical environment, social environment and ways of living.

In our countries we don’t relate the disease with the social status however in reality the relation does exist.

***\*Uses of Epidemiology***

All classifications of the diseases we took came from results of studies that were conducted by researchers in several countries around the world and they found that the nature of the disease of chronic gingivitis is the same, the manifestation orally is the same, the signs and symptoms are the same. But when this disease is not present we go back to relate to social factors, biological factors and so on.

Aggressive periodontitis that we took with Dr Ahmad is well known internationally, when we examine 1000 person, one of them must have aggressive periodontitis.

We can generalize that each of us irrespective of his socioeconomic status has had at one stage of his life Chronic Gingivitis.

Chronic Gingivitis in simple words is the accumulation of plaque when one doesn’t brush his teeth which initiate a biological process, so there will be an inflammation which is manifested orally as bleeding upon brushing or spontaneous bleeding, redness and swelling (which is caused by the accumulation of fluid). So we can generalize that each of us at a certain time has had gingivitis.

*How we can utilize Epidemiology?*

1. Collecting data to describe normal biological process that each of us passes through in his life. Eg; A-heights (We have now corresponding charts for heights in every maternal or children clinics and based on these they came up with a fact that is if you measure a 2 year old child’s height and you multiply it by 2 you would get his height at adulthood). B- Chronology of tooth eruption. C- Blood groups.
2. Identify determinants of the disease (Risk Factors). This is important for preventive approaches for patients with risk factors such as obesity, lack of exercise, smoking…

Now let’s talk about Plaque, how we did we know that plaque is the cause of gingivitis? An Epidemiologist brought samples of people and asked them to brush 3 times a day, results the other day were clean teeth with zero plaque and no gingivitis. Then he asked them not to brush for 5 to 6 days, so food accumulated and got converted into plaque in 3 to 4 days the first sign and symptom of gingivitis occurred. Then he asked them to brush again and examined them again, within 72 hours the disease started subsiding. So this researcher has proved beyond any doubt that the cause or the primary etiological factor of **Chronic Gingivitis** is **Plaque.**

1. Testing hypothesis for prevention and control of diseases through special studies in population, clinical studies and clinical drugs.

How would we know if this drug is effective in treating fever or bronchitis or elevating thyroid secretions and so on.

They bring two samples of people, one sample diseased and the other healthy and the drug is tested on them and then they start observing and writing down the results so by the time and results they’d know that this disease is cured by this drug and so on, these are called clinical trials.

Similarly patients with no disease were given Placebo. Sometimes Placebo cures some diseases psychologically.

1. Planning and evaluating health care services.

Here in Jordan we have 8,500 dentists, in the WHO since the 80s and 90s they have set a goal called “towards the year 2000” that stated by the year 2000 every 500 citizens share a dentist because they knew that the dentist is sufficient enough to treat the 2000 throughout the year. Now in Jordan we have 8500 other than the 4th and 5th dental students and the 100s of foreigners, we have 500 citizens sharing a dentist (statistically) but did the dream of eliminating oral diseases and carious lesions came true? NO, then we need to re-organize everything!

Another interesting information, we have now 12,000,000 people here in Jordan, for instance if we examine every single one of them and found that each have 7 cavities that needs restoration and 3 teeth to be extracted, if we multiply them by 12,000,000 and divided them on the working hours of dentists we’d need the double of 8,500 thus 17,000 dentists are needed to treat all teeth of the kingdom. So it’s obvious we have poor planning! We have high prevalence of oral diseases and high number of dentists but with no production. So epidemiology would help us organize and better plan and evaluate those services.

 Now, how are we going to get those results, how do we collect data?

1. Descriptive studies/analysis. (Descriptive means simply percentages).
2. Cross sectional studies.

What does cross sectional studies mean? For example 10 years ago 4th year students were examined for gingivitis and pocketing (periodontitis), counted how many had fillings and how many teeth were missing and how many teeth are carious and results were obtained,10 years later the same numbers of students were examined for the same data, and then comparison will be made between the two classes, this is called the cross sectional study: studying the same environment of the population at two different time lines but with different subjects, but the variables that are examined are the same. This kind of study provides information about **Awareness.**

1. Longitudinal studies; same subjects are examined at different time lines for a long time.

Percentage of fluoride that is acceptable in water is 1 part per million, the problem with fluoridating water here in Jordan is that all of our tanks are exposed to sunlight thus fluoride content will be concentrated and exceeds the 1 part per million which would cause Fluorosis.

Now we have tools, indices that are used for measurements of our studies.

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