Dental Sleep Medicine
Part I: introduction

During last year I had the privilege to be trained in the diagnosis and treatment of a deadly disease known as Snoring & Sleep Apnea. Getting to know the various health risk of this disease, I feel obliged to share my knowledge about this subject with the fine readers of the Health Journal in a consecutive series of articles.

Sleep is a naturally recurring state of relatively suspended sensory and motor activity, characterized by total or partial unconsciousness and the inactivity of nearly all voluntary muscles. Poor sleep can make us miserable, but getting a good night's rest can make us more productive and happier.

Sleep Architecture:

Sleep is regulated by the duration of wakefulness (homeostatic drive to sleep) and the time of day (circadian drive to sleep).
Sleep is divided into: Rapid Eye Movement (REM) and Non-Rapid Eye Movement (NREM) sleep. Each type has a distinct set features.
The NREM sleep is further divided into three stages:

- 1 (Light sleep 5% of the night),
- 2 (Consolidated sleep 50% of the night),
- 3 (deep or slow wave sleep 20% of sleep time).

The Rapid Eye Movement (REM) is a period of deep, refreshing sleep. Eye move side to side and the skeletal muscles are nearly paralysed. This represents 25% of the total sleep time and is the stage where dreaming occures.
Sleep proceeds in cycles of REM and NREM. The relative percentage of deep sleep is highest in the first sleep cycle and decreases as the night progresses. The relative length of REM sleep episods increases throughout the night. In infants the normal cycle of sleep last about an hour. In adults, it lasts about 1.5 hours. In the general adult population, 97% sleep between 6 – 9 hours per day. Sleeping less than 6 hours a night generally results in symptoms of sleep deprivation. Interestingly, sleeping excessively may also result in non-refreshing sleep and day time fatigue.
Possible functions of sleep includes: Energy Conservation, Brain Restoration, Memory Processing, Homeostasis, Improving Immune Function, Temperature Regulation, Protective Behaviour, Body Restoration & Wound Healing and Promoting physiological processes of growth and rejuvenation of the immune, nervous, muscular, and skeletal systems.

Sleep Disorder:

Sleep-related difficulties, typically called sleep disorder, affect many people. A sleep disorder disrupts and disturbs our overall quality of life. It can affect a child, teen, adult or senior citizen. The medical community recognizes over 70 different types of sleep disorders, which vary in symptoms, severity, causes and more. About 40 million people in the United States suffer from a chronic sleep disorder, and about 20 million more

suffer from occasional sleep problems. Most of those who have one are completely unaware of it or aware but untreated.
Sleep disorders are generally put into one of three categories: disturbed sleep, excessive sleep and lack of sleep. Major sleep disorders include: Insomnia, parasomnia, Narcolepsy, Restless Legs Syndrome and Snoring & Sleep Apnea.

Consequences of Sleep Disorder:

Sufficient sleep is increasingly being recognized as an essential aspect of health promotion and chronic disease prevention in the public health community.
Insufficient sleep is associated with a number of chronic diseases and conditions such as diabetes, cardiovascular disease, obesity, cognitive and emotional difficulties, poor school performance, sexual impotence, psychopathology and depression, which threaten our nation's health. Notably, insufficient sleep is associated with the onset of these diseases and also poses important implications for their management and outcome. Moreover, insufficient sleep is responsible for motor vehicle and machinery-related accidents, causing substantial injury and disability each year. In short, drowsy driving can be as dangerous, and preventable, as driving while intoxicated.

Dental Sleep Medicine:

Dental Sleep Medicine focuses on the management of sleep-related breathing disorder, which includes Snoring and, the life threatening, Obstructive Sleep Apnea (OSA) with oral appliance therapy and upper airway surgery.

My discussion in this series will concentrate primarily on sleep-related breathing disorders.

Sleep Disordered Breathing:

It has been estimated that 90 million people in North America have breathing problems leading to snoring and sleep apnea.
Sleep Disordered Breathing is a respiratory disturbances during sleep caused by structural problem (obstruction) in the nasal passages or oral airway that hinders respiration during sleep.
A nasal obstruction can be the result of swollen adenoids or tonsils, polyps, enlarged turbinate, allergies, sinus infection, deviated septum or anatomical small nasal cavity.
A normal airway remains patent during sleep even if the airway muscles are completely relaxed. When a person suffering from Sleep Disordered Breathing falls asleep, the muscles in the airway relax, but then partially or fully collapse in on one another causing airway obstruction. If obstruction is partial snoring sounds will happen. If obstruction is complete breathing will stop and insufficient oxygenation will occur and the body will react by gasping, choking or having a spasm and subsequent awakening to establish breathing again. This can happen several times every night leading to sleep problem.

Will meet again with Snoring discussion next month if GOD wells.