SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

OSUDU, AGARAM VILLAGE, KUDAPAKKAM POST,PUDUCHERRY-605502.

Date 29.12.2018

From
DR.BALAJI SUBRAMANIYAN. R
Professor and Head
Department of dentistry,
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES,
Bharath Institute of Higher Education and Research,
Chennai.

To
The Dean,
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES,
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Permission to conduct value-added course: SALIVA

Dear Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled:_**SALIVA** on 3.1.2019. We solicit your kind permission for the same.

Kind Regard

DR.BALAJI SUBRAMANIYAN. R

FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: DR.JAYALAKSHMI

The HOD: DR.BALAJI SUBRAMNIYAN

The Expert: GNANANANDHAR

The committee has discussed about the course and is approved.

Dean Subject Expert HOD

DEAN
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES
OSUDU, AGARAM VILLAGE,
KUDAPAKKAM POST,
PUDUCHERRY - 605 502

DEPARTMENT OF DENTISTRY
Bharath Institute Of Medical Sciences
PONDICHERRY - 605 502.

OFFICE OF THE DEAN
Sri Lakshmi Narayana Institute of Medical Sciences
OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,
PUDUCHERRY - 605 502.
[Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME (P -II) dt. 11/07/2011]
[Affliated to Bharath University, Chennai - TN]

Circular

30.12.18

Sub: Organising Value-added Course: SALIVA reg

With reference to the above mentioned subject, it is to bring to your notice that SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES,
, **Bharath Institute of Higher Education and Research**, is organizing **"SALIVA ON 3.1.19"**. The course content and registration form is enclosed below."

The application must reach the institution along with all the necessary documents as mentioned. The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before2.1.19 Applications received after the mentioned date shall not be entertained under any circumstances.

Dean

Encl: Copy of Course content and Registration form.

Course Proposal

Course Title: SALIVA

Course Objective: To Enlighten the important role of saliva for general practitioners.

Course Outcome: in depth knowledge to recognize abnormalities

Course Audience: MBBS Students

Course Coordinator: Dr. BALAJI.R

Course Faculties with Qualification and Designation:

1. **Dr. GNANANADHAR M.D.S& ASSISTANT PROFESSOR**

Course Curriculum/Topics with schedule (Min of 30 hours)

SlNo	Date	Topic	Time	Hours
1.	3.1.19	Salivary composition	4PM-7PM	3 hrs
2.	13.1.19	Applied anatomy of Salivary glands	4pm-7 pm	3hrs
3.	23.1.19	Dry mouth/ Xerostomia	5pm-8pm	3 hrs
4.	29.1.19	Sialolithiasis	4pm-7pm	3hrs
5.	3.2.19	Investigations in salivary glands dysfunction	5pm-8pm	3 hrs
6.	11.2.19	Parotitis	5pm-8pm	3 hrs
7.	19.2.19	Dysphagia	4pm-7pm	3 hrs
8.	23.2.19	Early childhood caries	5pm-8pm	3 hrs
9.	27.2.19	Salivary tumours	5pm-8pm	3 hrs
10.	3.3.19	Management of dry mouth	4pm-7pm	3 hrs
			Total Hours	30

REFERENCE BOOKS: (Minimum 2)

1. **MACCULLUM TEXT BOOK OF ORAL PATHOLOGY**
2. **SHAFER'S TEXT BOOK ON ORAL PATHOLOGY**

SALIVA

ABSTRACT

Physiology of saliva evolves in supporting many important activities in human life. Changes in age, environmental and living condition as well as eating habit would influence salivary function. Saliva plays a role in determining the development pattern and oral health. Saliva has a unique function in the defense mechanism to microorganism in the oral environment. Research focuses on the salivary physiology is limited and seems to be separated from medical and dental professional education. Better and deeper comprehensive understanding of saliva in health and disease is needed. Nowadays, many studies have used saliva to find diagnosis markers for specific diseases. Salivary analysis is intended to give descriptive information on disease status for prevention, monitoring and treatment purposes. To give understanding on salivary physiology in order to add new views of its application in the field of medicine and dentistry.

Physiology emphasizes normal constitution (static) and regulation (dynamic) of functional systems. The understanding is essential to conceive aberrations, their origins and consequences, and rational ways to rectify or prevent them to maintain healthy state. The significance of saliva physiology to both oral and systemic health is enormous. It constitutes the unique and dynamic ecologic milieu of oral cavity. Multiple components in saliva participate in homeostasis vital to health of oral structures. Lubrication of oral tissue facilitates speaking, chewing and swallowing. Hydrodynamic flushing serves debridement and levage. Saliva has key role in safeguarding hard and soft oral structures to ensure smooth feeding and nutrition.

INTRODUCTION

Saliva, one of the several fluids occurring in the human organism is of paramount importance to the dentist. An understanding of the role of saliva in complete dentures is essential for dental practice. There is hardly any aspect of clinical practice in which salivary glands and saliva do not play an obvious or hidden role. It has many mechanical and chemical functions and is a fairly sensitive parameter of certain bodily functions. With the exception of a portion of the anterior part of the hard palate, salivary glands are seen everywhere in the oral cavity.

The patient who wears complete denture prostheses depends on this oral fluid to provide adhesion and at the same time to prevent friction between the denture and the mucosa. So any alteration in saliva has a significant effect in these patients.

Relatively early, physiologists focused interest on the glands of the digestive tract and their secretions; fundamental knowledge of the salivary glands dates back to the work of Heidenheim, Pavlov, and Langley in the nineteenth century. In the present century, workers such as Babkin and Emmelin have contributed substantially to knowledge of the physiology of salivary glands.

The patient who wears complete denture prostheses depends on this oral fluid to provide adhesion and at the same time to prevent friction between the denture and the mucosa [1].

ANATOMY AND INNERVATION OF SALIVARY GLANDS

Salivary glands cover the entire oral cavity. Two of the three largest pairs are situated in the floor of the mouth; the third is located in the cheek around the ascending ramus of the mandible. The other smaller glands are situated in the lips, tongue, and palate. Three types, of secretory units (alveoli) are recognized, according to their secretion, viz., mucous, serous and mixed.

The only purely mucous glands are the palatine, molar, and lingual; the parotid glands are purely serous; the reminders are mixed. Of the latter, the sublingual gland has mainly a mucous secretion, and that of the submandibular gland is mainly serous. The individual glandular units in the three large salivary glands - the parotid, sublingual, and submandibular empty into the oral cavity via one or a few common excretory ducts. The sublingual gland, the smallest of the large

glands, is not a unitary gland but is made up of some thirty smaller glands, which empty along the sublingual fold in the floor of the mouth; the anterior sublingual glands form a larger unit, whose secretion is emptied through a duct, the major sublingual duct, into the so called sublingual caruncle. This eminence also contains the opening of the duct of the submandibular gland which, situated on the inner side of the mandible in the submandibular fovea, empties into the sublingual caruncula via a duct about 2 inches long.

Mean daily salivary output ranges from 500 to 1500 ml, and the average volume of saliva present in the oral cavity is approximately 1 ml. The rate of secretion follows a circadian rhythm, decreasing during sleep and increasing during the waking hours. Since most of this fluid is swallowed and reabsorbed by the gut it is not lost. Some salivary components are derived from blood plasma, and others are synthesized within the salivary glands

There is great variability in individual salivary flow rates. The accepted range of normal flow for unstimulated saliva is anything above 0.1 ml/min. For stimulated saliva, the minimum volume for the accepted norm increases to 0.2 ml/min. Any unstimulated flow rate below 0.1 ml/min is considered hypofunction[11].

Microscopic anatomy of salivary glands: Salivary glands are made up of a large number of individual secretory units, which consist of an acinus, an intercalated duct, and a striated duct. Many thousands of these secretory units converge on a main excretory duct that extends from the gland mass to drain into the oral cavity The terminology applied to the different parts of the secretory unit reflects differences in cytoarchitecture. Saliva forms at the proximal end of the duct in pyramid-shaped acinar cells arranged in spherical collections called acini. Acinar cells are by far the most numerous of the cell types and account for the bulk of the tissue making up a salivary gland. Several acini converge on a single intercalated duct, which connects to other intercalated ducts, which in turn converge on a striated duct or directly into the granular segments of the striated ducts if present. Many striated ducts connect to a few excretory ducts which all merge to form a single main excretory duct.

In addition to the secretory units other structures are found in salivary glands. Most notable are the myoepithelial cells, which envelop acini and intercalated ducts in long cytoplasmic extensions containing filaments that have contractile properties. Salivary glands possess a rich blood supply important not only in nutrient supply, but also as a major source of many components of saliva that are directly derived from the blood. Associated with the acinar and

duct cells are neural elements responsible for the control of salivary secretion, blood flow and the contraction of myoepithelial cells

CONTROL OF SALIVARY SECRETION

Parasympathetic control

Parasympathetic fibers to the submandibular and sublingual glands exit the brain stem in the nervus intermedius (facial, cranial nerve VII, nerve sensory branch), and join the chorda tympani, which then merges with the lingual nerve (a branch of the trigeminal nerve). The parasympathetic fibers then connect in the submandibular ganglion, and the postganglionic fibers distribute to the two glands. The efferent supply to parotid and lingual (von Ebner's) salivary glands travel in the glossopharyngeal nerve (IX). Parasympathetic fibers to the parotid gland travel in the tympanic plexus, lesser superficial petrosal nerve and synapse in the otic ganglion. Postganglionic fibers travel to the parotid gland in the auriculotemporal nerve. Lingual salivary glands receive their efferent parasympathetic supply through the lingual-tonsilar branch of the glossopharyngeal nerve.

Sympathetic Control

The sympathetic nerve supply to the salivary glands is derived from the superior cervical ganglion. Preganglionic fibers to the superior cervical ganglion have cell bodies located in the intermediolateral nucleus situated in the upper thoracic segments of the spinal cord. The preganglionic fibers ascend in the paravertebral sympathetic trunk to the superior cervic ganglion. After a synapse in the ganglion the postganglionic fibers travel to the glands as a plexus of nerves associated with blood vessels.

Distribution of Nerve Fibers in Glands

Once the secretomotor fibers reach the gland they distribute and connect acinar cells, myoepithelial cells, and blood vessels. Two types of neuroeffector relationship have been shown between nerve endings and acinar cell basement membranes. In the first, termed epilemmal, the axon is separated from the acinar cells by a basal lamina. In the second, called hypolemmal, the axon is closely apposed to the acinar cell beneath the basal lamina. The second type is usually but not always associated with parasympathetic, cholinergic innervation, whereas the first is often related to sympathetic innervation[7].

COMPOSITION AND FLOW OF SALIVA

Saliva is a very dilute fluid, composed of more than 99% water and only 1 % of saliva is made up of ions and organic components. Saliva is usually a dilute aqueous solution that is hypotonic when compared to serum. Lower levels of glucose, bicarbonate, and urea in unstimulated saliva augment the hypotonic environment to enhance taste. The normal pH of saliva is 6 to 7, meaning that it is slightly acidic. The pH in salivary flow can range from 5.3 (low flow) to 7.8 (peak flow) [1].

Inorganic components

The most important cations of saliva are sodium and potassium; the major osmotically active anions are chloride and bicarbonate. Other electrolytes that are present include calcium phosphate, fluoride, thiocyanate, magnesium sulfate, and iodine. Water and the ionic constituents of saliva are derived by translocation from blood plasma. However, although salivary electrolytes are derived from the blood supply, their ionic concentrations are not identical to plasma, so that saliva is not merely an ultrafiltrate of plasma.

Organic components:

Saliva contains many organic components with diverse functions, such as enzymatic action, coating of tissue surfaces, protection of dental tissues, and control of tissue growth. The digestive enzyme amylase is the organic component found in highest concentration in saliva. Lipase secreted by the lingual (von Ebner's) salivary glands probably has a very significant role in digestion. Lingual lipase is the enzyme responsible for the first step in fat digestion and is active at stomach pH. Mucous glycoproteins secreted in saliva have a high molecular weight and consist of multiple oligosaccharide chains attached to a peptide core. All oral soft tissues coated with mucous glycoproteins, which are thought to act as a trap for bacteria and a regulator of interaction and interchange between surface epithelial cells and the oral environment. Some of these glycoproteins bind strongly to the tooth surface and are, therefore, an important constituent of enamel pellicle.

Numerous other proteins found in saliva are not secretary in function .Secretory immunoglobulin A (IgA) is synthesized by plasma cells. Lysozyme in concert with other salivary bactericidal agents is probably important in oral protective functions.

The salivary duct cells are capable of secreting complex molecules such as nerve growth factor and kallikrein, but although the functions of these macromolecules are well established, they are probably of little importance if secreted into the oral cavity, unless some undiscovered function emerges[7].

A tyrosine-rich peptide, called statherin, may play a role in stabilizing supersaturated solutions of calcium and phosphate and therefore prevents calcium precipitating from saliva. The functions of other peptides such as histadine-rich peptide are unknown, although it has been suggested that they have a role in pellicle formation. Other possible functions for these proteins include aggregation of bacteria, which contributes to oral clearance of the microorganisms.

FUNCTIONS OF SALIVA

Cleansing: The mucosa and dentition are coated by a layer of mucin that impedes the surface accumulation of food and other debris. The flow of saliva continually washes this material off surfaces towards the back of the mouth where it is eventually swallowed.

Lubrication: There is considerable movement between the structures within the oral cavity in addition to stretching of the mucosa during normal activities. Saliva, by virtue of its rheological properties, forms a continuous surface film over all surfaces, its viscoelastic nature facilitating the maintenance throughout function. For this lubricative function, the water content, mucins and proline-rich proteins are necessary.

Mucosal integrity: The mucosa is maintained in an hydrated state because of the surface-charged aqueous film. Mucins are important in maintaining this protective for the epithelium, and the electrolyte content of the saliva is also relevant. Potential mucosal irritants are diluted in saliva and the array of antimicrobial systems is involved in promoting a healthy commensal flora. Growth factors, such as epidermal growth factor, have the potential to act topically although their importance in the mouth is unclear.

Buffering: The principal buffering agent in saliva is bicarbonate, although phosphate and proteins also contribute to its buffering capacity, protecting the dentition from demineralization by plaque organic acids.

Remineralisation: Saliva is supersaturated with calcium and phosphate resulting in, at neutral pH, the equilibrium being towards non-dissolution of the enamel. Statherin and anionic proline-rich proteins enable high concentrations of calcium and phosphate to be maintained in

saliva without precipitation but allow exchange of these ions with the hydroxyapatite surface. The remineralisation process is further enhanced by fluoride.

Antimicrobial: The attachment of micro-organisms to the mucosa and teeth is modulated by the surface film of charged glycoproteins and proteins. Several antimicrobial substances present in saliva influence fungal, bacterial and viral growth, so maintaining a balanced commensal flora. These substances include immunoglobulins, lactoferrin. lysozyme, the thiocyanate/peroxidase system, cystatins and histatins.

Digestive: Foods are dissolved or diluted in saliva, allowing them to be tasted and subsequently swallowed. Saliva also contains a number of enzymes capable of initiating digestion, such as α-amylase and lipase, although their importance in humans is unclear.

Research applications: Many areas of research involving salivary components and functions are in progress for local and systemic disease diagnosis, treatment, and prevention. The value of saliva undoubtedly will continue to increase because it serves as an easily collected, noninvasive source of information. Reflective of the status of health in the body, salivary samples can be analyzed for: (1) tissue fluid levels of naturally, therapeutically, and recreationally introduced substances; (2) emotional status; (3) hormonal status; (4) immunologic status; (5) neurologic status; and (6) nutritional/metabolic influences[11].

Salivary flow measurements revealed that mucous saliva is necessary for undisturbed function of the denture bearing mucosa and for comfort with dentures. Further, palatal saliva improves the retention of upper complete dentures.

The best lubricating components of saliva are mucins that are excreted from minor salivary glands. Mucins are complex protein molecules that are present predominantly in two molecular weight types and formed by polypeptide chains that stick together. These mucins have the properties of low solubility, high viscosity, high elasticity, and strong adhesiveness. Any intraoral contact between soft tissues, between soft tissues and teeth, or between soft tissues and prostheses benefits from the lubricating capability of saliva supplied largely by these mucins. Mastication, speech, and swallowing all are aided by the lubricating effects of mucins.

Buffering action and clearance are a second function of saliva through the following components: bicarbonate, phosphate, urea, and amphoteric proteins and enzymes. Bicarbonate is the most important buffering system. It diffuses into plaque and acts as a buffer by neutralizing acids. More than 90% of the nonbicarbonate buffering ability of saliva is attributed to low-molecular-weight, histidine-rich peptides. Urea, another buffer present in saliva, releases ammonia after being metabolized by plaque and thus increases plaque pH. The buffering action of saliva works more efficiently during stimulated high flow rates but is almost ineffective during periods of low flow with unstimulated saliva. Phosphate is likely to be important as a buffer only during unstimulated flow.

Immunologic contents of saliva include secretory IgA, IgG, and IgM. Nonimmunologic salivary contents are selected proteins, mucins, peptides, and enzymes. Secretory IgA, the largest immunologic component of saliva, is an immunoglobulin produced by plasma cells in connective tissues and translocated through the duct cells of major and minor salivary glands. IgA while active on mucosal surfaces, also acts to neutralize viruses, serves as an antibody to bacterial antigens, and works to aggregate or clump bacteria, thus inhibiting bacterial attachment to host tissues.

Lysozymes, derived from the basal cells of striated ducts in parotid glands, split bacterial cell walls, leading to the destruction and inhibition of bacterial growth. Moreover, lysozymes promote the clearance of bacteria through aggregation. Gingival crevicular fluid also contributes lysozymes from plasma.

Finally, proteins such as glycoproteins, statherins, agglutinins, histadine-rich proteins, and proline-rich proteins work to aggregate bacteria. This "clumping" process, reduces the ability of bacteria to adhere to hard or soft tissue intraoral surfaces and thereby controls bacterial, fungal, and viral colonization.

SALIVA AND DENTURE PELLICLE

Salivary constituents show high affinity of binding with denture surface may be responsible for many surface properties of denture base, which include microbial adherence subsequent plaque formation, and denture staining.

Salivary mucins and secretary Ig A in saliva are found to have a regulatory effect in attachment of microorganisms to tissues and the denture. Secretary Ig A was found to inhibit or promote the attachment of bacteria to hydroxyapatite and inhibitory effect on yeast and bacteria to buccal epithelial surface. Other salivary components as well as normal serum appear to be determinants of Candida to acrylic denture surface. Mucin is also found to modulate the adherence of microorganism to denture surface.

The pellicle layer is responsible for the formation of extrinsic staining and calculus deposition on the denture base. The spontaneous precipitation of calcium and phosphate salts influence calcifications in dentures.

When denture prosthesis is placed in the oral cavity, a layer of saliva rapidly adsorbs to the surface. This is termed acquired denture pellicle. The pressure of acquired denture pellicle is described in ultra structural studies as a thin (2-4 Micron) electron dense layer that may appear as a striated lamellar palisade. The minor salivary glands of palatal mucosa must be considered a major source of acquired denture base, but also the tissue side. This is due to their close proximity to the denture base, but also the isolating effect of maxillary palatal surface which is designed to create a border seal. This pellicle formation may predispose to denture stomatitis. Denture induced stomatitis found in 11-67% of denture patients. Many factors predisposes to denture induced stomatitis. Complete denture wearers for many years show palatal gland destruction. It may be due to pressure atrophy resulting from lost residual alveolar ridge support of denture.

SALIVA AND ORAL GALVANISM

Although oral galvanism has been known ever since the time of Galvani at the end of the eighteenth century, it did not become an important problem until after the First World War. Owing to the high price of gold at that time, dental surgeons, especially in Germany, began to use alloys containing lead, copper, tin aluminum, iron, silver, nickel, and zinc. The use of different alloys in the oral cavity, which contains such a good electrolyte as saliva, permitted the development of electrical potential differences known as "oral galvanism".

Oral galvanism is said to cause the following phenomena:

1) Sensation of pain in and around the teeth

2) Ulceration of the mucosa

3) Corrosion and discoloration

All metals tend to release ions into the solution. This tendency, which varies from one metal to another according to its chemical properties, is called the electrical soluble tension. This is counteracted by the osmotic pressure of the ions. If the soluble potential is greater than the osmotic pressure the metal dissolves by releasing positive ions into the fluid; the fluid thus becomes positively charged and the metal becomes negatively charged. This increases the osmotic pressure, and when this pressure has become equal to the soluble tension, a state of equilibrium is achieved. Between the metal and the electrolyte there is then a potential difference.

If the soluble tension of the metal is less than the osmotic pressure, the ions in the solution are charged on the metal, which thus becomes negative. In this way the soluble pressure of the metal increases and the osmotic pressure of the solution decreases. This continues until equilibrium is achieved. A potential difference arises here although the direction of current is opposite.

Generally speaking, readily oxidizing metals, such as aluminum, zinc, magnesium and iron in a solution of acids or of their salts become negatively charged while the more noble, less oxidized metals become positively charged.

The metals have been classified empirically according to their electrolytic potential. This potential is lowest among the noble metals. Each metal shows an electropositive relationship to

every successive element in a solution of equivalent ionic concentration. In other words, the position of the metal in the electromotive series may be taken as a measure of its resistance to chemical action and as a yardstick of the resistance of a metal in a given electrolyte.

The electrolytic action between two metals or alloys in the mouth will, however, be of less importance as long as an electric current can flow between them a galvanic element. In the oral cavity with saliva as the electrolyte, the continuous renewal of the saliva prevents equilibrium and thereby maintains the electrolytic action, so that part of the metal gradually goes into solution-corrosion. This is often accelerated by the presence of another metal, even if they are not in contact with each other. If, for example, aluminium and copper or a copper alloy is present in the oral cavity, ions of both metals will, independently of each other, go into solution to a certain degree. Copper alone do not readily go into solution, but the presence of aluminium, with its higher soluble potential, causes the copper ions to be discharged and to be released' as a free metal. This disturbs the equilibrium between the copper and copper solution, and both aluminium and copper corrode. The situation is however, often still more complicated because the metals used are nearly always alloys. Often several different alloys are in contact with one another, which results in a complex of electric currents. These currents sometimes produce an increase and sometimes a decrease of the eletrogalvanic phenomena[1].

When ever two metals are present in the oral cavity, in contact with and rinsed by saliva, they will produce a closed element and a circuit. In the element, chemical energy is converted into electrical energy, with the result that the filling, which acts as the anode, is dissolved. With gold and amalgam, for example, as electrodes, the amalgam will be the anode in the galvanic element and release ions into the solution as long as the current is present. The amalgam becomes corroded. The higher the potential differences between the amalgam and the other electrode, i.e., the nobler the cathode is the more rapid corrosion.

Annexure- II

VALUE ADDED COURSE

SALIVA
DI-9

List of Students Enrolled Sep 2016 – Jan- 2017

Year MBBS Student		
Sl. No	**Name of the Student**	**Roll No**
1	VINOTHINI .S	U15MB397
2	YAKSHANA. D	U15MB398
3	YAUVANNASRI. J	U15MB399
4	SRIRAM .S	U16MB381
5	SUBALAKSHMI .D	U16MB382

DR. GANANANDHAR
RESOURCE PERSON

DR. BALAJI SUBRAMANIYAN
COORDINATOR

Bharath Institute of Higher Education and Research

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES,

Participant list of Value added course of SALIVA

Sl.No	Reg.No	Name of the candidate	Signature
1	U15MB397	VINOTHINI .S	
2	U15MB398	YAKSHANA. D	
3	U15MB399	YAUVANNASRI. J	
4	U16MB381	SRIRAM .S	
5	U16MB382	SUBALAKSHMI .D	

NAME: SUNITHA
ROLL NO: 01BHB383

Saliva

The watery, slightly alkaline fluid secreted into the mouth by Salivary glands and mucous membrane that lines the mouth

- watery and frothy in consistency - produced in humans and purified and secreted from the Salivary glands.

classification:

- Major
- Minor.

Major Salivary glands.

- parotid
- Submandibular
- Sub lingual

Minor Salivary glands.

- Labial / buccal
- Incisor
- palatine
- Glossopalatine
- von - ebners

II. Classification of Salivary glands
Based on the type of Saliva Secretion

- Mucous
- Serous
- Mixed.

PH- 5-8.

Function of Salivn.

- Digestive
- protective — Lubrication properties.
  — Maintenance of mucous membrane.
- Taste.
- Excretion
- Water balance.
- oral hygiene.

Disease of the Salivary gland:

- Parotitis.
- Sialo lithiasis.
- Salivary gland tumors.
  - Spino-cellular Carcinoma.
    - Breast cancer.
    - Blood cancer.

Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education & Research
Deemed to be University u/s 3 of the UGC Act, 1956

CERTIFICATE OF MERIT

This is to certify that __YAKSHANA.D__ has actively participated in the Value Added Course on *SALIVA* held during JAN 2019 – MAR 2019 Organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. GANANANADAR
RESOURCE PERSON

DR.BALAJI.R
COORDINATOR

Student Feedback Form

Course Name: SAIVA

Subject Code: DI - 9

Name of Student: SRIRAM. S Roll No.: U16MB387

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand				✓	
5	Teaching aids were effective			✓		
6	Instructors encourage interaction and were helpful			✓		
7	The level of the course			✓		
8	Overall rating of the course	1	2	3 ✓	4	5

** Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

Date: 29.12.18

Signature

COURSE COMPLETION

Date5.3.2019

From
DR. BALAJI SUBRAMANIYAN.R
DEPARTMENT OF DENTISTRY,
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES,
Bharath Institute of Higher Education and Research,
Chennai.

Through Proper Channel

To
The Dean,
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES,
Bharath Institute of Higher Education and Research,
Chennai.

Sub: Completion of value-added course: SALIVA

Dear Sir,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **SALIVA** on 3.3.2019. We solicit your kind action to send certificates for the participants, that is attached with this letter. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr. BALAJI SUBRAMANIYAN.R

Encl: Certificates

Photographs