
**CURRICULUM
FOR
2 YEARS DIPLOMA PROGRAMME
IN
OTOLOGY AND LARYNGOLOGY
(DLO)**



2007

**UNIVERSITY OF HEALTH SCIENCES
LAHORE, PAKISTAN**

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FOREWORD

University of Health Sciences (UHS) Lahore was inaugurated by the President of Pakistan on the 3^d of October 2002 with the vision to explicitly address academic and research needs in the field of health sciences and allied disciplines and to uplift their existing level to bring them on a par with the international standards.

The mission of the University is to develop an intellectual nexus to provide excellence and innovation in medical education and research in order to;

- Impart knowledge and skills to health care providers to enhance their competence in providing community oriented and multi-disciplinary patient-centered care
- Train and produce researchers and specialists in basic and clinical medical sciences
- Establish and maintain continuing professional development programmes for the faculty
- Provide trained professionals and scientists/researchers for the field of Electro Medical/Bio-Medical disciplines
- Assure quality in health education and research at all levels

A university is the zenith of knowledge that imparts quality education and awards degrees for extensive educational attainments in various disciplines with attendant advancement for the development of intellectual community. Protection of traditional knowledge, making exploration about it and obtaining deep understanding of modern technology and research techniques are some of the responsibilities of any university.

UHS is running a number of courses in the field of health sciences in Punjab. The list extends from undergraduate level courses up to the doctorate level both in basic, clinical and allied health sciences.

Since its inception, certain vital tasks were taken into serious consideration by UHS; for instance, curricula development and their up-gradation were among the most important ones besides introduction of contemporary educational programmes.

UHS has revised and finalized curricula for undergraduate Medical/Dental Education, BSc Nursing, and Allied Health Sciences.

In keeping with its commitment for further improvement in the standard of medical education, UHS has taken an initiative to modify and improve one year postgraduate diploma courses to 2 years structured training programmes.

I do not believe in selling an old product in a new packing with a fresh label on it, just to do the job. Original products with actual outcomes for the society must be guaranteed. Being the Vice Chancellor of a public sector health university, I believe, it is my duty to remain vigilant and committed to the cause of improvement of the conventional medical and allied health sciences' curricula on regular basis. This will help produce technically sound professionals with advanced knowledge and skills.

Presently, UHS has designed and facilitated curriculum development committees for eleven clinical disciplines namely: DTCD, DPM, DMRT, DOMS, DLO, Dip. Card, DCH, DCP, DGO, DMRD and DA.

This document precisely briefs the details of updated curriculum for Diploma in Otolaryngology (DLO) as prepared by the Experts' Committee.

I am pleased to acknowledge the efforts made by Prof. I. A. Naveed, the Department of Medical Education and the members of the committee for DLO consisting of: *Prof. Iqbal Hussain Butt (LM&DC), Prof. Rashid Zia (AIMC), Prof. Muhammad Ali Tirmizey (PMC) and Prof. Zubair Iqbal Bhutta (AIMC)*. The contributions made by them will go a long way in the education and training of doctors in this field.

I hope, the revised course will be able to meet the needs of latest trends in Otolaryngology and will certainly produce competent mid-level specialists in the field, which is the main objective of this programme.

Prof. M. H. Mubbashar

Hilal-e-Imtiaz, Sitara-e-Imtiaz
MB, FRCP, FCPS Psych, FRC Psych, DPM
Vice Chancellor/ Chief Executive

AIMS AND OBJECTIVES OF THE COURSE

AIM

The aim of 2 years diploma programme in Otolaryngology is to equip medical graduates with relevant professional knowledge, skills and ethical values to enable them to apply their acquired expertise at primary and secondary health care organizations as non-academic mid-level consultants.

OBJECTIVES

DLO training should enable a student to:

1. Take a comprehensive and pertinent history of a patient presenting with ENT complaints
2. Perform detailed physical examination in a rational sequence that is both technically correct as well as methodical
3. Elicit physical signs without discomfort to the patient
4. Evaluate patients in the setting of outpatients department, hospital wards and emergency
5. Order a set of relevant investigations considering availability, diagnostic yield, cost-effectiveness, side effects, and implications for management
6. Comprehend Community Indicators related to individual's health
7. Aware of and can apply national and international guidelines for treatment and assessment
8. Counsel patients and relatives in patient's preferred language in elective and emergency situations in keeping principles of good communication skills, empathy and empowerment to patients
9. Exhibit emotional maturity and stability, integrity, ethical values and professional approach, sense of responsibility in day-to-day professional activities
10. Take proper informed consent for physical examination and ensure confidentiality and appropriate environment for intimate physical examination
11. Act as an independent specialist at community level/Tehsil and District Headquarter Hospital
12. Show initiative and become life long self-directed learners tapping on resources including clinical material, faculty, internet and on-line learning programmes and library

SPECIFIC LEARNING OUTCOMES

Following competencies will be expected from a student completing 2 years' course in DLO, student should be able to:

1. Discuss etiology, pathogenesis, epidemiology and management of disorders in ENT on topics given in the list of course contents
2. Discuss principles of basic sciences as applied to ENT like haemorrhage, blood transfusion, shock, sterilization of instruments, infection, antibiotics, inflammation, repair & healing, malignancy
3. Formulate a working diagnosis and consider relevant differential diagnosis
4. Decide and implement suitable treatments considering safety, cost factors, complications and side effects
5. Practice proper procedures in operating theatres and procedure rooms including gowning, gloving, use of various sutures, surgical principles, & use & working of electro medical equipment
6. Maintain follow-up of patients at appropriate intervals, recognizing new developments and/or complications and offering sensible management protocols
7. Perform recommended ENT related clinical procedures with expertise

In addition to above mentioned general competencies, a student should be able to perform following surgical procedures at the end of 2 years training:

- Tonsillectomy
- Adenoidectomy
- Oesophagoscopy
- Bronchoscopy
- Incision Drainage of Pharyngeal abscesses
- Septoplasty /SMR
- Turbinectomy
- Proof Puncture (Antral Washout)
- Inferior Meatal Antrostomy
- Intranasal Polypectomy
- Cald Well Luc's Operation, Cortical Mastoidectomy, Radical Mastoidectomy, Modified Radical Mastoidectomy

NOMENCLATURE AND DURATION

NOMENCLATURE OF THE PROPOSED COURSE:

The name of the diploma may be called as DLO i.e, Diploma in Otolaryngology or better be called DORL i.e, Diploma in Otology, Rhinology and Laryngology. The duration of courses should be two years structured training in a recognized department under an approved supervisor.

Course Title: DLO (Diploma in Otolaryngology)

Training Centres: ENT departments (accredited by UHS) in affiliated institutes of the University of Health Sciences Lahore

Course Duration and Scheme of the Course:

Total Duration 2 years structured training (6 months in Part I and one & a half year in Part II) in a recognized department under the guidance of an approved supervisor

Part I-SIX MONTHS

Theoretical Component

1. Applied Anatomy
2. Applied Physiology
3. Comparative study of Anatomy and Physiology of the ear, nose and throat in relation to lower animals
5. Acoustics
6. General Pathology
7. Principles of General Surgery
8. Behavioural Sciences
9. Introduction to Biostatistics and Research

Clinical Component

- Regular duties in wards and OPD
- Routine history taking, examination and investigation

Part II- YEAR & a HALF

Theoretical Components

1. Diseases of ENT in detail
3. Operative procedures
4. Hearing Aids

5. Audiometer
6. Hearing tests, Labyrinth tests
9. Study of ENT related pathological specimens

Clinical Component

- Regular duties in wards and OPD
- Endoscopic examination of the oesophagus, trachea and bronchi and interpretation of the skiagrams
- Hearing test, Labyrinth tests
- Operations on the mastoid and Labyrinth
- Operation on the dead body(mastoid region and the skull)

Compulsory Clinical Rotations

- Radiology
- Radiotherapy
- Plastic Surgery
- Neurosurgery
- Faciomaxillary Surgery

ELIGIBILITY CRITERIA FOR ADMISSION

DOCUMENTS REQUIRED FOR THE ADMISSION

1. Completed DLO application form
2. Copy of MBBS degree with mark sheets of professional examinations and certificate of number of attempts in the professional examinations
3. Copy of PMDC registration certificate
4. Three latest passport size photographs
5. Reference letters from two consultants, with whom the applicant has worked
6. Certificates of completion of required experience

GENERAL REQUIREMENTS

Candidates eligible for admission should have MBBS or equivalent qualification, registered with PMDC and can fulfill one of the following criteria:

- a. One year experience in ENT as medical officer/house surgeon
- b. One year experience in Surgery as medical officer/house surgeon
- c. Six months experience in ENT and six months in allied specialty

SPECIAL REQUIREMENTS

1. Obtaining pass percentage in the entry test as determined by the UHS rules
2. Qualifying the interview successfully
3. Having up to the mark credentials as determined by the UHS (no. of attempts in each professional, any gold medals or distinctions, relevant work experience, research experience from a recognized institution, any research article published in a National or an International Journal)

REGISTRATION AND ENROLLMENT

- The total number of students enrolled for the course must not exceed 8 per unit
- UHS Lahore will approve supervisors for diploma courses
- Candidates selected for the courses will be registered with relevant supervisors and enrolled with UHS

RECOGNITION/EQUIVALENCE OF THE DEGREE AND INSTITUTION

After two years training course, candidate should be given status of mid-level specialist equivalent to any other similar qualification.

Accreditation related issues of the institution:

1. Faculty

Properly qualified teaching staff in accordance with the requirements of Pakistan Medical and Dental Council (PMDC)

2. Adequate Space

Including class-rooms (with audiovisual aids), computer lab, pathology lab, portable X-Ray unit, operation theatre, audiometry room, endoscopy room

3. Library

Departmental library should have latest editions of recommended books for DLO, reference books and latest journals (two National and one International)

CONTENT OUTLINE

Part I DLO

ANATOMY

1. Anatomy of the ear, nose, throat and trachea, larynx, and accessory sinuses, and their development
2. Blood supply, Nerve supply and the Lymphatic drainage of the ear, nose, throat and trachea, larynx, and accessory sinuses
3. Anatomy of the Central Nervous System with particular reference to ear, nose and throat
4. Gross Anatomy of neck and chest in relation to trachea and oesophagus
5. Comparative study of Anatomy of the ear, nose and throat in relation to lower animals

PHYSIOLOGY

1. Physiology of ear, nose, throat and oesophagus
2. Comparative study of physiology of the ear, nose and throat in relation to lower animals

ACOUSTICS

Physics of sound (FSc standard)

GENERAL PATHOLOGY

Cell Injury and adaptation

Cell Injury

- Reversible and Irreversible Injury
- Fatty change, Pigmentation, Pathologic calcification
- Necrosis and Gangrene

Cellular adaptation

- Atrophy, Hypertrophy,
- Hyperplasia, Metaplasia, Aplasia

Inflammation

- **Acute inflammation** --- Vascular changes, Chemotaxis, Opsonization and Phagocytosis
- Enlist the cellular components and chemical mediators of acute inflammation
- Differentiate between exudates and transudate

- **Chronic inflammation**

- Etiological factors, Granuloma

Cell repair and wound healing

- Regeneration and Repair

- Healing--- steps of wound healing by first and second intention
- Factors affecting healing
- Enlist the complications of wound healing

Haemodynamic disorders

- Define and classify the terms Edema, Haemorrhage, Thrombosis, Embolism, Infarction & Hyperaemia
- Define and classify Shock with causes of each.
- Describe the compensatory mechanisms involved in shock
- Describe the pathogenesis and possible consequences of thrombosis
- Describe the difference between arterial and venous emboli

Neoplasia

- Dysplasia and Neoplasia
- Differences between benign and malignant neoplasms
- Enlist the common etiological factors for neoplasia
- Define and discuss the different modes of metastasis
- TNM staging system and tumor grade

Immunity and Hypersensitivity

PRINCIPLES OF GENERAL SURGERY

BEHAVIOURAL SCIENCES

- a. Bio-Psycho-Social (BPS) Model of Health Care
- b. Use of Non-medicinal Interventions in Clinical Practice
 - Communication Skills
 - Counselling
 - Informatinal Skills
- c. Crisis Intervention/Disaster Management
- d. Conflict Resolution
- e. Breaking Bad News
- f. Medical ethics, Professionalism and Doctor-Patient Relationship
 - Hippocratic Oath
 - Four Pillars of Medical Ethics (Autonomy, Beneficence, Non-malficence, justice)
 - Informed Consent and Confidentiality
 - Ethical Dilemmas in a Doctor's Life
- g. Delivery of Culturally Relevant Care and Cultural Sensitivity
- h. Psychological Aspects of Health and Disease

- Psychological Aspect of Health
- Psychological Aspect of Disease
- Stress and its Management
- Psychological Aspect of Pain
- Psychological Aspect of Aging

BIostatISTICS AND RESEARCH METHODS

- a. Introduction to Bio-Statistics
- b. Introduction to Bio-Medical Research
- c. Why research is important?
- d. What research to do?
 - Selecting a Field for Research
 - Drivers for Health Research
 - Participation in National and International Research
 - Participation in Pharmaceutical Company Research
 - Where do research ideas come from
 - Criteria for a good research topic
- e. Ethics in Health Research
- f. Writing a Scientific Paper
- g. Making a Scientific Presentation
- h. Searching the Literature

Part II DLO

1. Diseases of the external ear
2. Diseases of the middle ear and internal ear
3. Operations on the mastoid and Labyrinth
4. Mechanism of artificial aids for hearing
5. Audiometer (construction and working)
6. Hearing tests, Labyrinth tests
7. Diseases of the naso-pharynx, oropharynx-hypoharynx, larynx, trachea, bronchi and oesophagus
8. Diseases of the septum, turbinals and accessory sinuses
9. Study of the pathological specimens and slides pertaining to the Ear, Nose and Throat
10. Study of general diseases affecting the Ear, Nose and Throat

METHODS OF INSTRUCTION/COURSE CONDUCTION

As a policy, active participation of students at all levels will be encouraged.

Following teaching modalities will be employed:

1. Lectures
2. Seminar Presentation and Journal Club Presentations
3. Group Discussions
4. Grand Rounds
5. Clinico-pathological conferences
6. SEQs as assignments on the content areas
7. Skill teaching in operation theatres
8. Self study, assignments and use of internet
9. Bedside teaching rounds in ward
10. OPD & Follow up clinics
11. Long and short case presentations
12. Clinical skills training workshops (Audiology Clinic, temporal Bone Dissection Workshop, FESS Workshop)

In addition to the conventional teaching methodologies following interactive strategies will also be introduced to improve both communication and clinical skills in the upcoming consultants:

1.1. Monthly Student Meetings

Each affiliated medical college approved to conduct training for DLO will provide a room for student meetings/discussions such as:

- a. Journal Club Meeting
- b. Core curriculum meetings
- c. Skill Development

a. Journal Club Meeting

Two hours per month should be allocated to presentation and discussion of a recent Journal article related to ENT diseases. The article should be critically evaluated and its applicable results should be highlighted, which can be incorporated in clinical practice. Record of all such articles should be maintained in the relevant department of each medical college. Students of different medical colleges may be given an opportunity to share all such interesting articles with each other.

b. Core Curriculum Meetings

All the core topics of DLO should be thoroughly discussed during these sessions. The duration of each session should be at least two hours once a month. It should be chaired by the chief student (elected by the students of the relevant diploma). Each student should be given an opportunity to brainstorm all topics included in the course and to generate new ideas regarding the improvement of the course structure.

c. Skill Development

Two hours twice a month should be assigned for learning and practicing clinical skills.

List of skills to be learnt during these sessions is as follows:

1. Communication skills
2. Physical examination related to the ENT
3. Interpretation of skiagrams
4. Practical skills i.e, use of relevant clinical instruments
5. Presentation skills: Power point, lectures, small group discussions, article presentation etc.
6. Research and scientific writing
7. Management of ENT related emergencies in Primary Care
8. For acquisition of procedural skills like Endoscopic examination of oesophagus, trachea and bronchi, Proof Puncture (Antral washout) etc. opportunities during ward postings should be availed

1.2 Annual Grand Meeting

Once a year all students enrolled for DLO should be invited to the annual meeting at UHS Lahore.

One full day will be allocated to this event. All the chief students will present their annual reports. Issues and concerns related to their relevant diploma courses will be discussed. Feedback can be collected and also suggestions may be sought in order to involve students in decision making.

Student's research work and their literary work may also be displayed. In the evening an informal gathering and dinner should be arranged. This will help in creating a sense of belonging and ownership among students and the faculty.

LOG BOOK

The trainees must maintain a log book and get it signed regularly by the supervisor. A complete and duly certified log book should be part of the requirement to sit for DLO examination. Log book should include adequate number of diagnostic and therapeutic procedures, routine and emergency management of patients, case presentations in CPCs, journal club meetings and literature review.

Proposed Format of Log Book is as follows:

Candidate's Name: _____
Roll No. _____

PROCEDURES:

- Tonsillectomy
- Adenoidectomy
- Oesophagoscopy
- Bronchoscopy
- Incision drainage of Pharyngeal abscesses
- Septoplasty /SMR
- Turbinectomy
- Proof Puncture (Antral Washout), Inferior Meatal Antrostomy,
- Intra nasal Polypectomy
- Cald Well Luc's Operation: Cortical Mastoidectomy, Radical Mastoidectomy Modified, Radical Mastoidectomy

Sr.#	Date	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedure Performed	Supervisor's Signature
1					
2					

Emergencies Handled

Sr. #	Date	Name of Patient, Age, Sex & Admission No.	Diagnosis	Procedure /Management	Supervisor's Signature
1					
2					

Case Presented

Sr.#	Date	Name of Patient, Age, Sex & Admission No.	Case Presented	Supervisor's Signature
1				
2				

Seminar/Journal Club Presentation

Sr.#	Date	Topic	Supervisor's signature
1			
2			

Evaluation Record

(Excellent, Good, Adequate, Inadequate, Poor)

Sr.#	Date	Method of Evaluation (Oral, Practical, Theory)	Rating	Supervisor's Signature
1				
2				

LITERATURE REVIEW

Students will be assigned a clinical problem; most commonly encountered in the relevant specialty and will be specifically trained to review literature in the relevant field and write a '**Review of an Article**' comprising of:

- Topic
- Introduction
- Discussion of the reviewed literature
- Conclusion
- References

EXAMINATIONS

It will consist of action and professional growth oriented ***student-centered integrated assessment*** with an additional component of ***informal internal assessment, formative assessment*** and measurement-based ***summative assessment***.

Student-Centered Integrated Assessment

It views students as decision-makers in need of information about their own performance. Integrated Assessment is meant to give students responsibility for deciding what to evaluate, as well as how to evaluate it, encourages students to '**own**' the evaluation and to use it as a basis for self-improvement. Therefore, it tends to be growth-oriented, student-controlled, collaborative, dynamic, contextualized, informal, flexible and action-oriented.

In the proposed curriculum, it will be based on:

- Self Assessment by the student
- Peer Assessment
- Informal Internal Assessment by the Faculty

Self Assessment by the Student

Each student will be provided with a pre-designed self-assessment form to evaluate his/her level of comfort and competency in dealing with different relevant clinical situations. It will be the responsibility of the student to correctly identify his/her areas of weakness and to take appropriate measures to address those weaknesses.

Peer Assessment

The students will also be expected to evaluate their peers after the monthly small group meeting. These should be followed by a constructive feedback according to the prescribed guidelines and should be non-judgmental in nature. This will enable students to become good mentors in future.

Informal Internal Assessment by the Faculty

There will be no formal allocation of marks for the component of Internal Assessment so that students are willing to confront their weaknesses rather than hiding them from their instructors.

It will include:

- a. Punctuality
- b. Ward work
- c. Monthly assessment (written tests to indicate particular areas of weaknesses)
- d. Participation in interactive sessions

Formative Assessment

Will help to improve the existing instructional methods and the curriculum in use

Feedback to the faculty by the students:

After every three months students will be providing a written feedback regarding their course components and teaching methods. This will help to identify strengths and weaknesses of the relevant course, faculty members and to ascertain areas for further improvement.

Summative Assessment

It will be carried out at the end of the programme to empirically evaluate **cognitive, psychomotor** and **affective domains** in order to award diplomas for successful completion of courses.

Eligibility to Appear in Final Examination

- Only those candidates will be eligible to take final examination, who have passed Part 1 examination (after 6 months of education) and have completed two years of structured/supervised training programme
- Candidates who have completed their log books and hold certificates of 75% attendance should be allowed to sit for the exam
- The application for the final examination will be forwarded with recommendations of the supervisor
- Only those candidates who qualify in theory will be called for clinical examination

DLO Examination

Part I DLO

Topics included in paper 1

- | | |
|----------------------------------|----------|
| 1. Anatomy | (15 MCQ) |
| 2. Physiology | (15 MCQ) |
| 3. Acoustics | (20 MCQ) |
| 4. General Pathology | (15 MCQ) |
| 5. Principles of General Surgery | (20 MCQ) |
| 6. Behavioural Sciences | (10 MCQ) |
| 7. Biostatistics and Research | (05 MCQ) |

Components of the Part 1 examination

MCQ Paper	100 One Best Type
Total Marks	100 Marks

Part II DLO

Topics included in paper 1

Diseases of the ear
Operations on the mastoid and Labyrinth
Hearing aids
Audiometer

Topics included in paper 2

1. Hearing tests, Labyrinth tests
2. Diseases of the naso-pharynx, oropharynx-hypoharynx, larynx, trachea, bronchi and oesophagus
3. Diseases of the septum, turbinals and accessory sinuses
4. General diseases affecting the Ear, Nose and Throat

Part II Examination

Theory

Paper I

10 SEQs (No Choice)
50 MCQs

100 Marks

50 Marks
50 Marks

3 Hours

Paper II

10 SEQs (No Choice)
50 MCQs

100 Marks

50 Marks
50 Marks

3 Hours

The candidates who pass in theory papers, will be eligible to appear in the clinical & viva voce.

OSCE

90 Marks

10 stations each carrying 9 marks of 10 minutes duration; each evaluating performance based assessment with five of them interactive

Clinical

90 Marks

Four short cases each carrying 15 marks and one long case of 30 marks.

Components of the Part II examination

Theory paper 1	100 marks
Theory paper 2	100 marks
Clinical/Oral	180 marks
Log Book	20 marks
Total Marks	400

A panel of four examiners from ENT department (Two internal and two external) will be appointed for practical examination.

Each component of practical examination will be assessed by two examiners awarding marks simultaneously and independently. The final score awarded will be an average score, as agreed by both examiners.

Pass Percentage and other Regulations Regarding Examination

- Criterion referenced assessment principles will be used
- 20 marks for the log book will be included in the OSCE component
- 60% marks will be a pass score in each component
- Candidates failing in any one component will have to re-sit the entire examination
- A maximum of 5 attempts to sit for the examination will be allowed, to be availed within 3 calendar years of the first attempt
- Re-admission in DLO course is not permissible under any circumstances
- The results will be announced according to rules and regulations set by the Examination Branch of University of Health Sciences Lahore

RECOMMENDED BOOKS

1. Johnson. A case Approach to Open Structure Rhinoplasty with DVD-ROM
2. Dhingra. Diseases of ENT
3. Lore. An Atlas of Head and Neck Surgery. 4th ed.
4. Glasscock. Glasscock-Shambaugh Surgery of the Ear. 5th ed.
5. Logan. McMinn's Clor Atlas of Head and Neck Anatomy. 3^d ed.
6. Prescott. Oxford Hand Book of ENT
7. Miller. The Otolaryngologic Clinics of North America February
8. Kerr. Scott-Brown's Otolaryngology. 6th ed.; 1997
9. Watkinson. Stell and Maran's Head and Neck Surgery. 4th ed.
10. Bailey. Head and Neck Surgery –Otolaryngology. 3rd ed.
11. Masud. Text Book of ENT.
12. Wormald. Endoscopic Sinus Surgery
13. Water. Otolaryngology Basic Science and Review.
14. Grewal. Atlas of Surgery of the Facial Nerve.
15. Hazarika. Clinical and Operative Methods in ENT and Head and Neck Surgery
16. Maniglia. Surgical reconstruction of the Face and Anterior Skull Base.
17. Sheen J. H. Assymetrical Alar Base: Secodary Rhinoplasty Video.
18. Salvi-Hende. Auditory System Plasticityand Regeneration
19. Ballenger. Ballenger's Otolaryngology: Head and Neck
20. Rubin J. S. Diagnosis and Treatment of Voice Disorders. 3^d Ed.
21. Yousem M. Head and Neck Surgery: Case Review Series. 2nd ed. (PB)
22. CD-ROM – Laryngoscope 1995-96 CD-ROM
23. Aperilla
24. The British Journal of Otolaryngology
25. Journal of Academy of Otolaryngology and Head and Neck Surgery
26. Otolaryngology Clinics of North America
27. American journal of Otolaryngology
28. Scott Brown Text Book of Otolaryngology
29. Fathalla M. F. and Fathalla M. M. F. A Practical Guide
30. for Health Researcher. Cairo: World Health Organization; 2004.
31. Rana M. H., Ali S. Mustafa M. **A Handbook of Behavioural Sciences for Medical and Dental Students.** Lahore: University of Health Science; 2007.