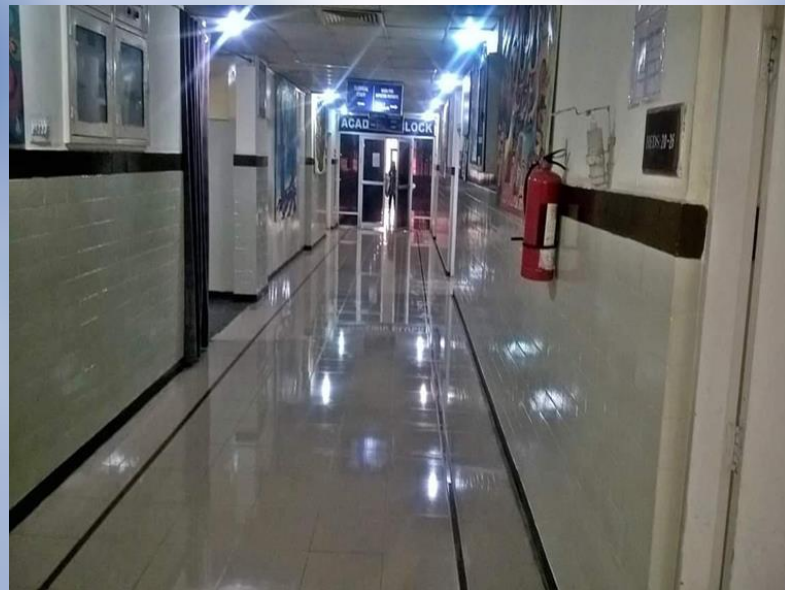




ANNUAL REPORT YEAR-2020

SURGICAL UNIT-1 HOLY FAMILY HOSPITAL RAWALPINDI



DEPARTMENT OF SURGERY
SURGICAL UNIT-I
HOLY FAMILY HOSPITAL, RAWALPINDI
2020



PREFACE

“COVID-19 is here to stay.....”

The above-mentioned saying is repeated many times by WHO representatives over the course of last few months. It has been a difficult time for surgical patients as many surgeries have been postponed indefinitely especially in the last year when COVID-19 1st arrived in Pakistan.

During these troubled times, the whole team of surgical unit-1, under the leadership of Professor Jahangir Sarwar Khan has tried its level best to provide adequate surgical care to patients while following SOPs of COVID-19. We have continued academic activities via online sessions and also held various workshops with strict COVID-19 protocols. Research work also didn't stop at SU-1 during this time, and we have contributed our share for advancement in the field of surgery.

In this annual report, I have tried to summarize all these activities to give a broad picture of how our unit has fared during the year 2020, a year that was marred with COVID-19...

Dr. Syed Waqas Hasan
Senior Registrar
SU-I
Holy Family Hospital.

PATRON

Professor Dr Jahangir Sarwar Khan

EDITORIAL BOARD

- Dr Syed Waqas Hasan

Under supervision of

- Dr Usman Qureshi
- Dr Gohar Rasheed

INDEX

1. SURGICAL UNIT-I A BRIEF INTRODUCTION	6
2. WARD SET-UP	9
3. Unit Hierarchy	10
4. CLINICAL SERVICES YEAR 2020	12
5. OPD SERVICE DATA	13
6. ER SERVICE DATA	16
7. OPERATIVE SERVICES DATA	18
8. INPATIENT SERVICE DATA	21
9. WARD INFRASTRUCTURE DEVELOPMENT	24
10. EDUCATIONAL SERVICES	26
11. CLINICAL TEACHING OF 3 rd YEAR MBBS STUDENTS	27
11. CLINICAL TEACHING OF FINAL YEAR MBBS STUDENTS	28
12. HOUSE SURGEON TRAINING PROGRAM	29
13. POST GRADUATE TRAINING PROGRAM	29
14 FELLOWS OF SURGICAL UNIT-1	33
15. RESEARCH AND PUBLICATIONS	36

SURGICAL UNIT-1
A BRIEF INTRODUCTION

TEACHING FACULTY

	<p>PROFESSOR JAHANGIR SARWAR KHAN</p> <p>MBBS, FCPS, FRCS, FRCA, FICS</p> <p>Professor and Head of department Surgical unit-1 Dean of university Residency program</p>
	<p>Dr. USMAN QURESHI</p> <p>MBBS, FCPS, MRCEM, Dip Med</p> <p>Associate professor of surgery Head of emergency medicine foundation program</p>
	<p>Dr. GOHAR RASHEED</p> <p>MBBS, FCPS</p> <p>Assistant professor of surgery</p>

	<p>Dr. SEHRISH SIDDIQUE MBBS, FCPS</p> <p>Senior Registrar Su-1</p>
	<p>Dr. RAMLAH GHAZANFER MBBS, FCPS, MRCS</p> <p>Senior Registrar Su-1</p>
	<p>Dr. SYED WAQAS HASAN MBBS, FCPS, MRCPs</p> <p>Senior Registrar Su-1</p>
	<p>Dr. SIDRA MEHMOOD DAR MBBS, FCPS</p> <p>Senior Registrar Su-1</p>

WARD SETUP

Surgical unit-1 is 54 bedded Department, with Professor Dr Jahangir Sarwar Khan as the H.O.D. Ward is divided into male and female wings with a well-equipped high dependency unit for monitoring and management of seriously ill patients. We have recently developed a “step-down” wing in ER post op room that is fully equipped with state-of-the-art monitors and oxygen supply to cater the needs of seriously ill patients. We have an infected ward for patients who have infected wounds and need barrier nursing with isolated cubicles to decrease cross infections as much as possible. We have a seminar room with audio/video facilities, Classrooms for 3rd and final year students, a common room for doctors working in department, male and female house surgeons and PGRs duty rooms, a dressing room, minor procedure room, nursing staff rooms and stores. In the year 2009 a learning resource center was established.

Table showing distribution of beds in SU-1

MALE SURGICAL WING	13
FEMALE SURGICAL WING	20
HDU	04
ER post-op (step-down)	06
Infected	05
SICU	06
TOTAL	54

THE UNIT HEIRARCHY

SU-1 is headed by Professor Dr Jahangir Sarwar khan and under his leadership a team of hard-working medical personals is providing clinical and educational services to community.

HEAD OF DEPARTMENT

Professor Dr Jahangir Sarwar Khan

ASSOCIATE PROFESSOR

Dr Usman Qureshi

ASSISTANT PROFESSOR

Dr Gohar Rasheed

SENIOR REGISTRARS AND MEDICAL OFFICERS

Dr Ramlah Ghazanfer

Dr Sehrish Siddique

Dr Syed Waqas Hasan

Dr Sidra Dar

Dr Adnan

POST GRADUATE RESIDENTS

Dr Khadija

Dr Sidra

Dr Maryam

Dr Yumna

Dr Sumaira

Dr Jamal

Dr Noshaba

Dr Anum Saeed

Dr Bushra

Dr Sayyam

Dr Waleed

Dr Usama

Dr Khalid

Dr Anum Shafique

Dr Sadaf

Dr Shakeel

Dr Danyal

Dr hamza

Dr Arsalan Satti

Dr Joham javed

Dr Ayesha Bahar Hashmi

NURSING STAFF

Head Nurse Charge Nurse

Miss Komal
Miss Zeenat
Miss Shamshad
Miss Misbah
Miss Shagufta
Miss Fakhra
Miss Saima
Miss Fehmida

WARD CLERK/COMPUTER EXPERT

Mr.Asad Mehmood
Mr.Nayk Mohammad

DRESSERS

Mr.Zeeshan

PEON

Mr. Ghulam mohyuddin

WARD BOYS

Mr. Naseem Shah
Mr. Zameer
Mr. Tabeer
Mr. Wajid
Mr. Waheed
Mr. Umair

SWEAPERS

Mr.Ahsan
Mr.Micheal
Miss. Shazia

CHOWKIDAR

Mr Rizwan

***CLINICAL SERVICES
YEAR 2020***

1-OUT PATIENT SERVICES

2-EMERGENCY SERVICES

3-OPERATIVE SERVICES

4-IN PATIENT SERVICES

OPD SERVICE DATA

Surgical unit provides an out-patient service three days a week i.e., Monday, Wednesday, and Friday. Unfortunately, in 2020, OPDs were compromised and numbers were a lot less than previous years. A consultant and A senior registrar with a team of PGRs and house surgeons are responsible for OPD service. OPD is organized to provide clinical services to new and follow up patients in separately allocated rooms. In addition a minor OT for minor procedure and a dressing room is also the part of OPD. Keeping in view the incidence and difficulties in diagnosis and treatment of breast problems a separate Breast clinic is run on every Wednesday.

TABLE SHOWING OPD AVERAGES IN YEAR 2020

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
male	1183	1383	999	406	275	383	877	1560	1164	1001	571	767	10569
female	1249	1349	1102	357	213	304	854	1750	1354	1875	627	876	11910
total	2432	2732	2101	763	488	687	1731	3310	2518	2876	1198	1643	22479

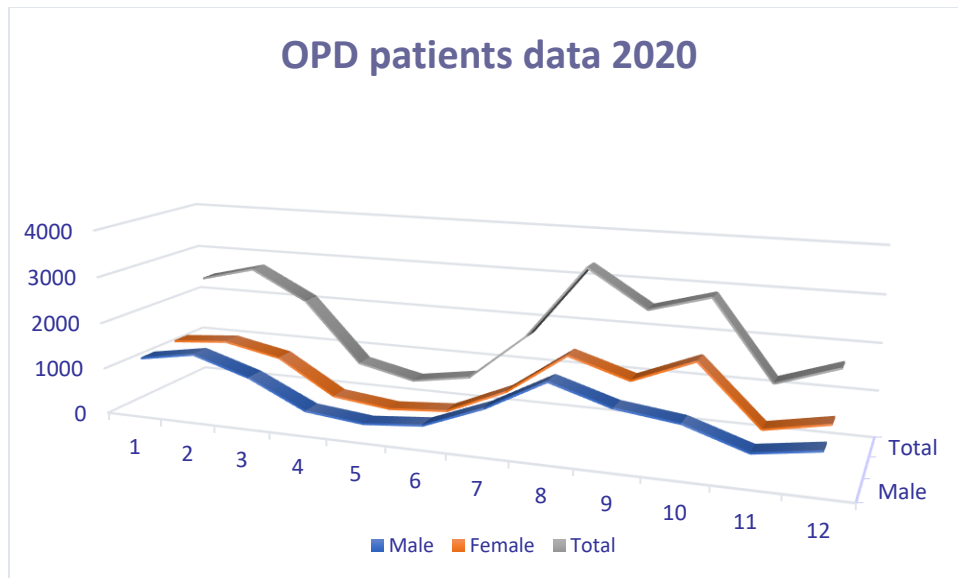
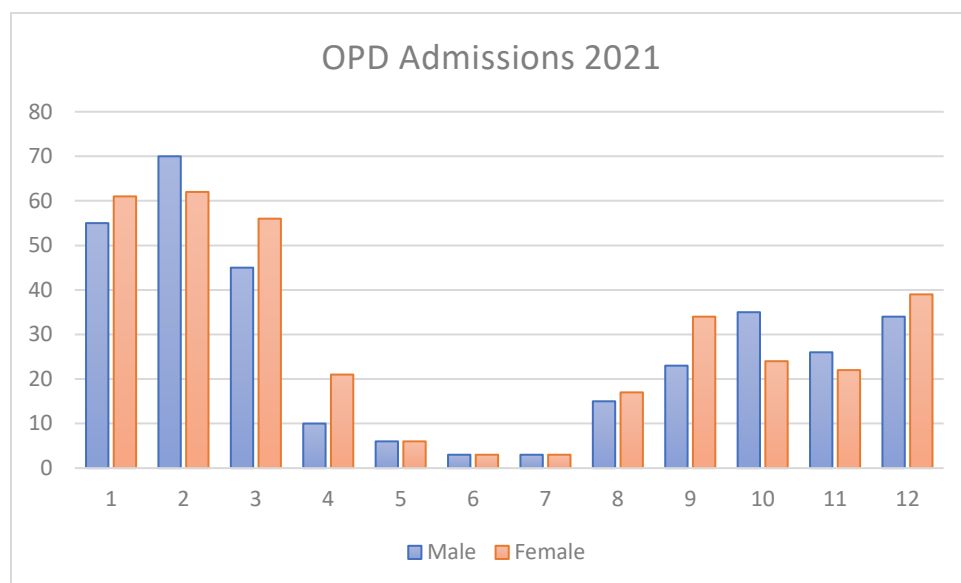


TABLE SHOWING OPD AVERAGES IN YEAR 2020

TOTAL PATIENTS SEEN IN OPD IN 2010	22479
AVERAGE PATIENTS PER MONTH	1873
AVG PATIENTS SEEN PER OPD	156
PATIENTS SEEN IN BREAST CLINIC	408

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MALE	55	70	45	10	6	3	3	15	23	35	26	34	325
FEMALE	61	62	56	21	6	3	3	17	34	24	22	39	348
TOTAL	116	132	101	31	12	6	6	32	57	59	48	73	673

Table Showing admissions from OPD

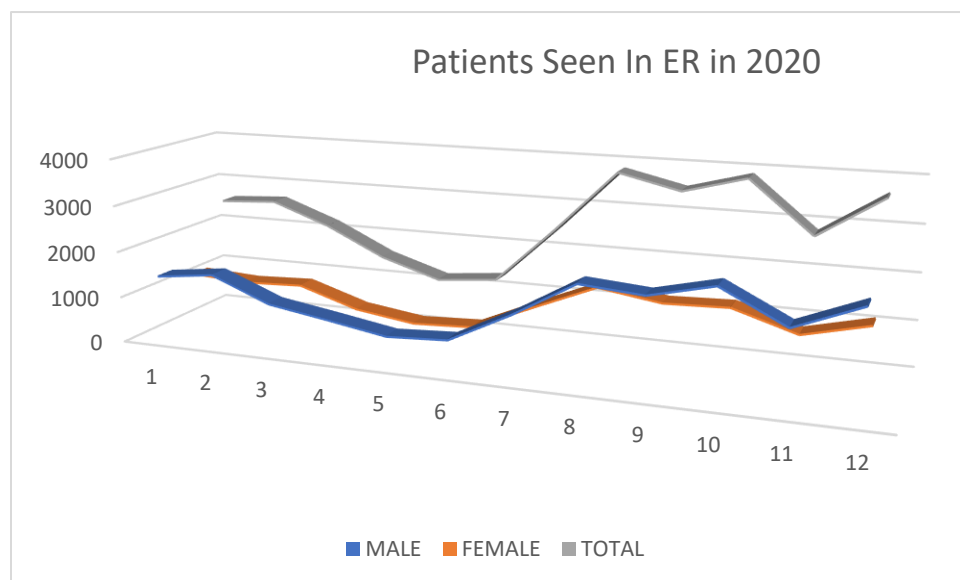


ER SERVICE DATA

SU-I provide ER services on Monday, Wednesday and Friday every week and alternate Sundays every month. A team of residents and house surgeons under supervision of senior registrar are responsible for different stations of ER call. A morning report of cases dealt in ER is discussed with consultant after every ER call.

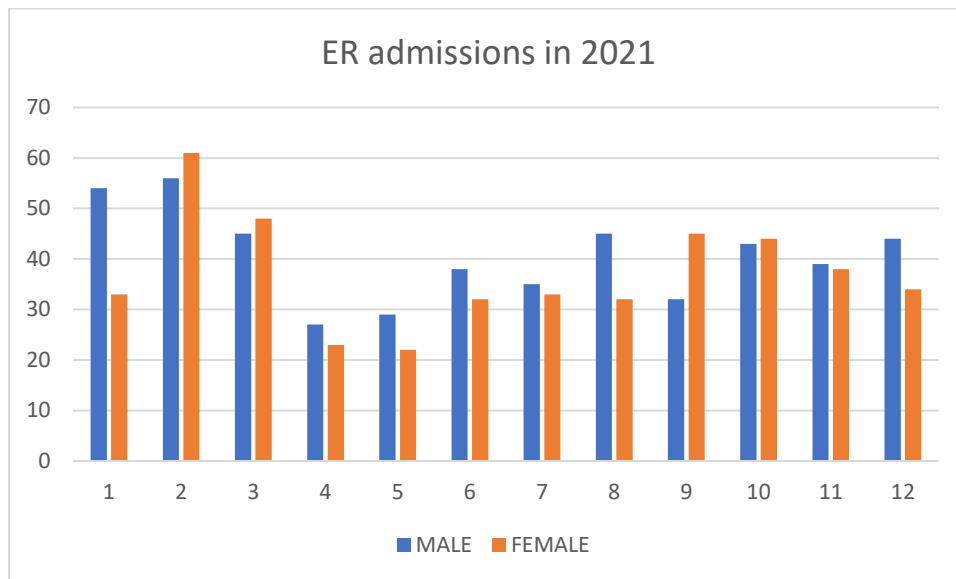
NO OF PTs DEALT IN ER IN YEAR 2020

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MALE	1418	1569	1055	849	631	699	1357	2117	2012	2322	1654	2198	17881
FEMALE	1146	1071	1123	714	531	588	1155	1700	1500	1543	1132	1453	13656
TOTAL	2565	2640	2178	1563	1162	1287	2512	3817	3512	3865	2786	3651	31537



NO OF PTs ADMITTED VIA ER IN YEAR 2020

	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL
MALE	54	56	45	27	29	38	35	45	32	43	39	44	487
FEMALE	33	61	48	23	22	32	33	32	45	44	38	34	445
TOTAL	87	117	93	50	51	70	68	77	77	87	77	78	932



OPERATIVE SERVICE DATA

Surgical unit-1 is doing 3 elective lists per week i.e., on Tuesday, Thursday and Saturday. There are 5 OT tables with 4 tables for major cases and one table for minor procedures under local anesthesia. On Saturdays minor list with 2 OT tables is done.

Emergency OT is available round the clock seven days. SU-1 is one of the very few units of the country where major surgical procedures like vascular, thoracic and pancreatic surgical procedure are performed

GRAPH SHOWING NUMBER OF SURGICAL PROCEDURES PERFORMED PER MONTH

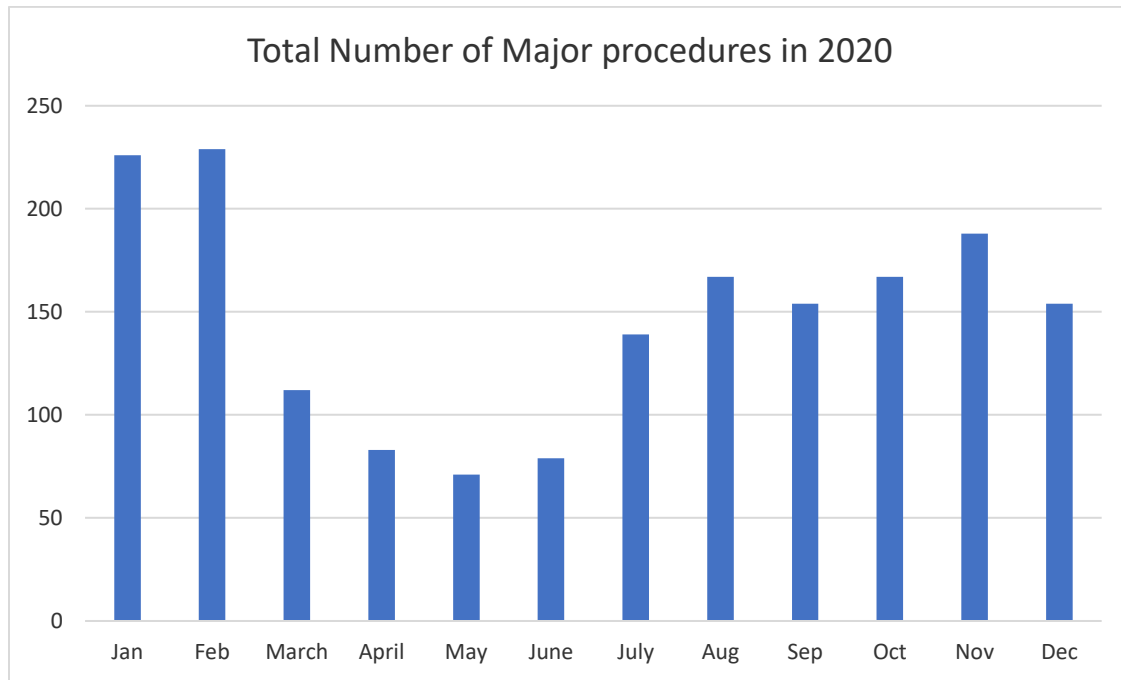
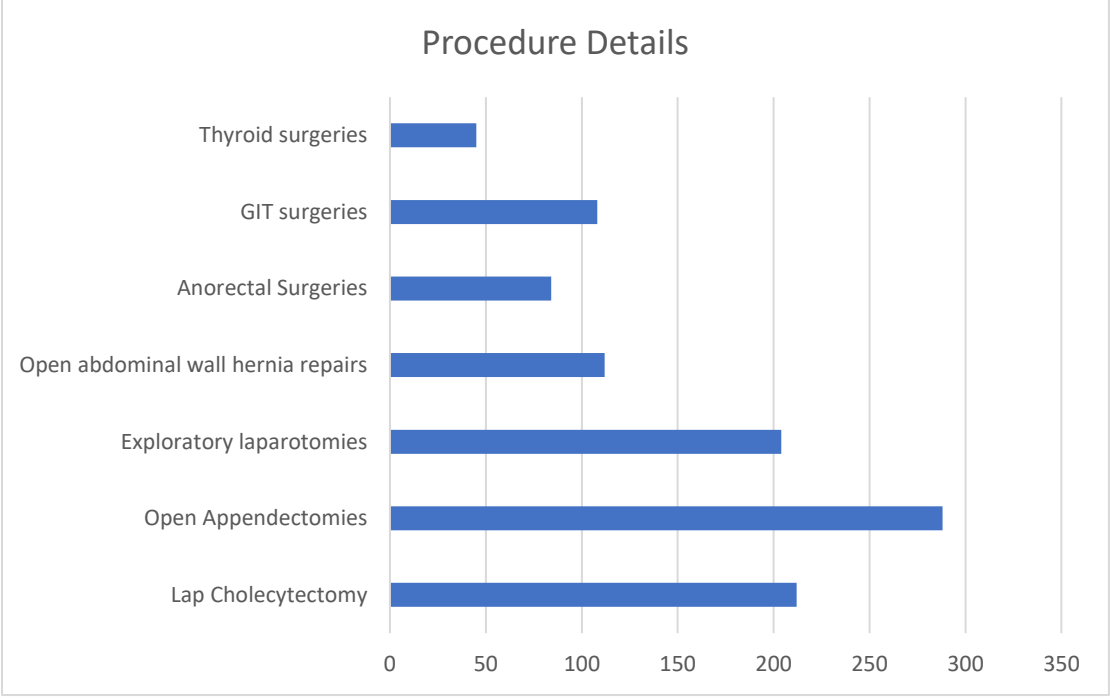
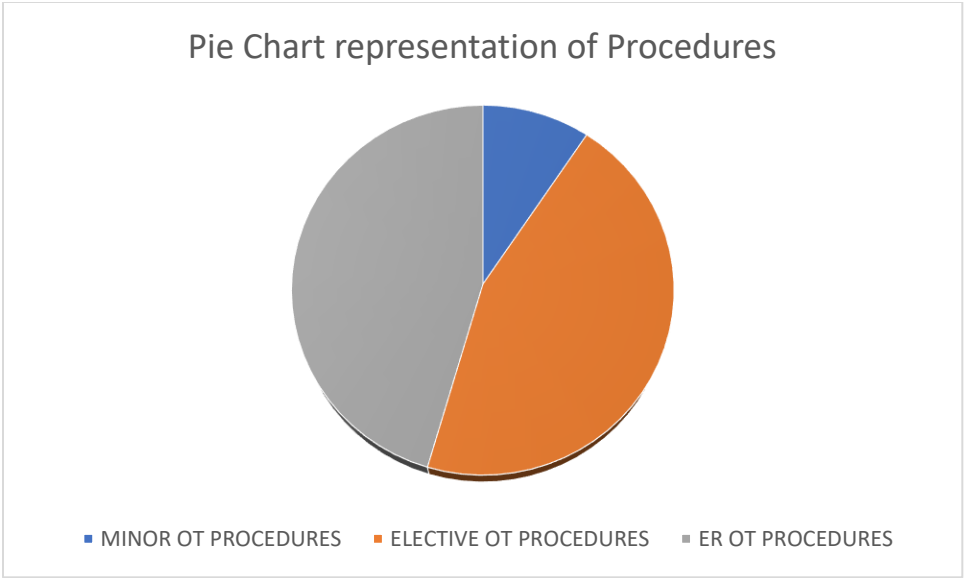
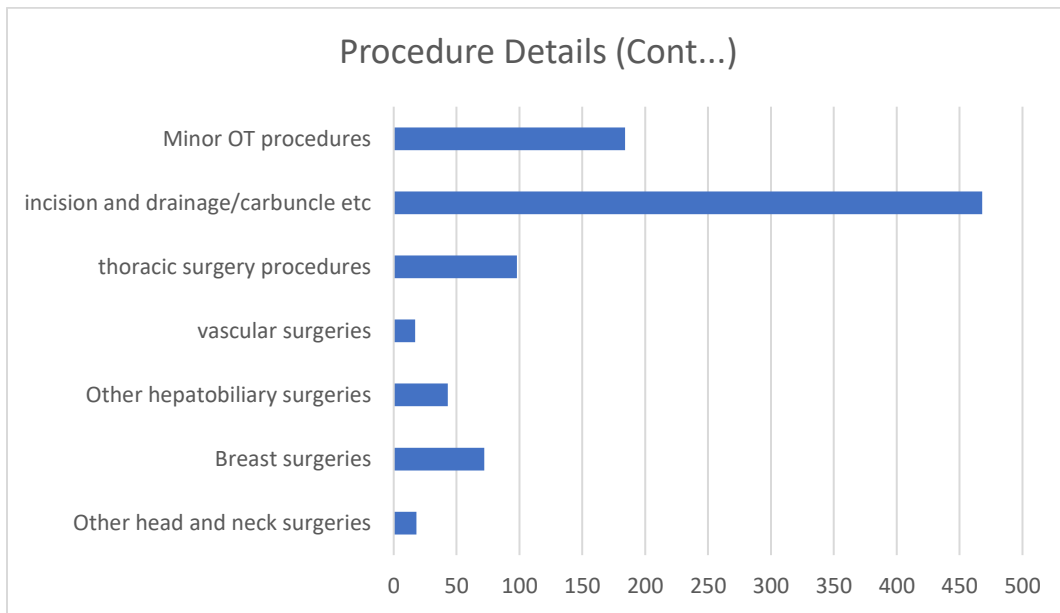


TABLE SHOWING COMPARISON OF SURGERIES DONE IN YEAR 2020 IN ELECTIVE/ER AND MINOR OT

MINOR OT PROCEDURES	ELECTIVE OT PROCEDURE	ER OT PROCEDURE	TOTAL
184	881	888	1953

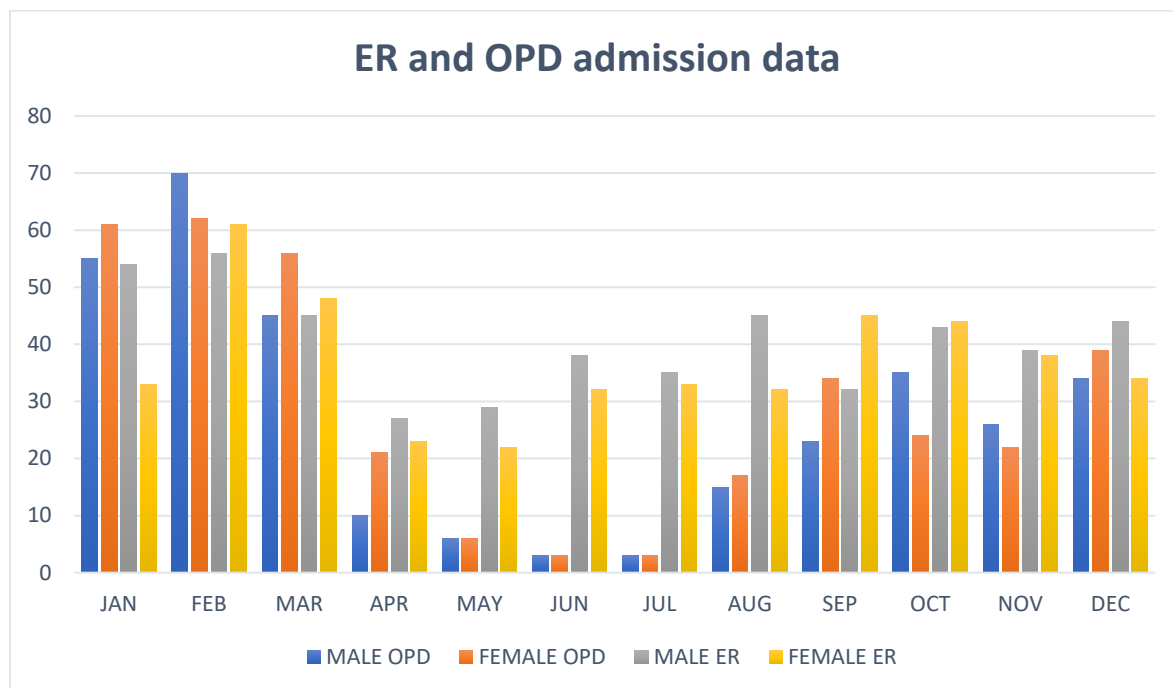




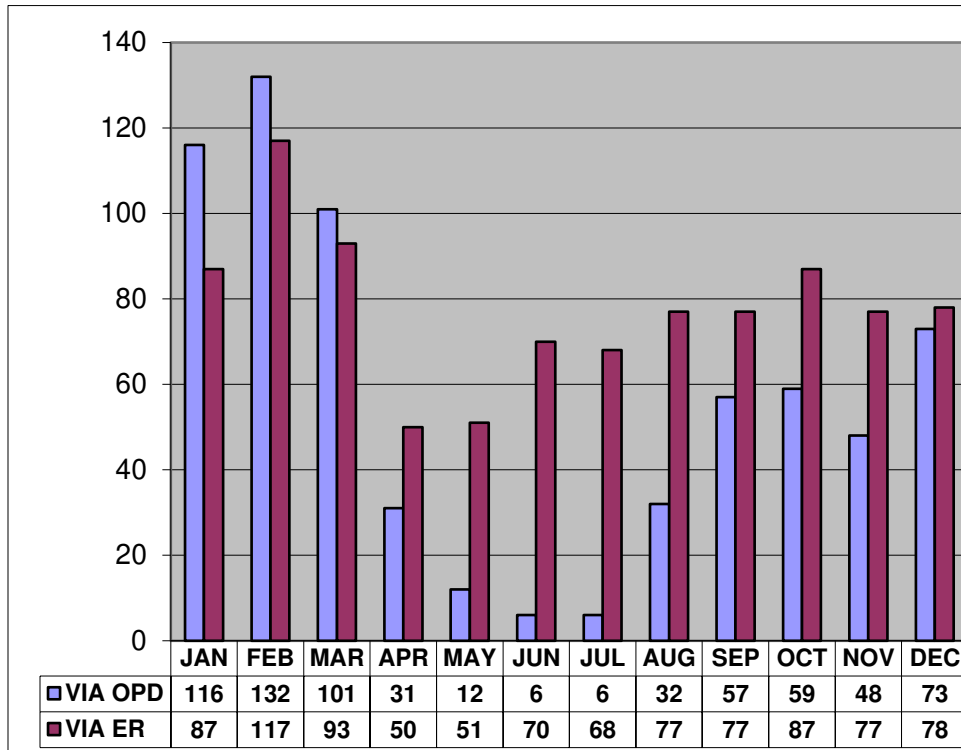
INPATIENT SERVICE DATA

SU-1 is a 54 bed unit which provides pre-operative, post-operative and diagnostic facilities to the admitted patients. Regular morning round by the consultants and evening round by the senior registrar ensure the delivery of care facilities to the admitted pts. Residents and house surgeons are responsible for management of allotted beds. In addition, paramedical, nursing and associated ward staff ensures best possible level of services to patients.

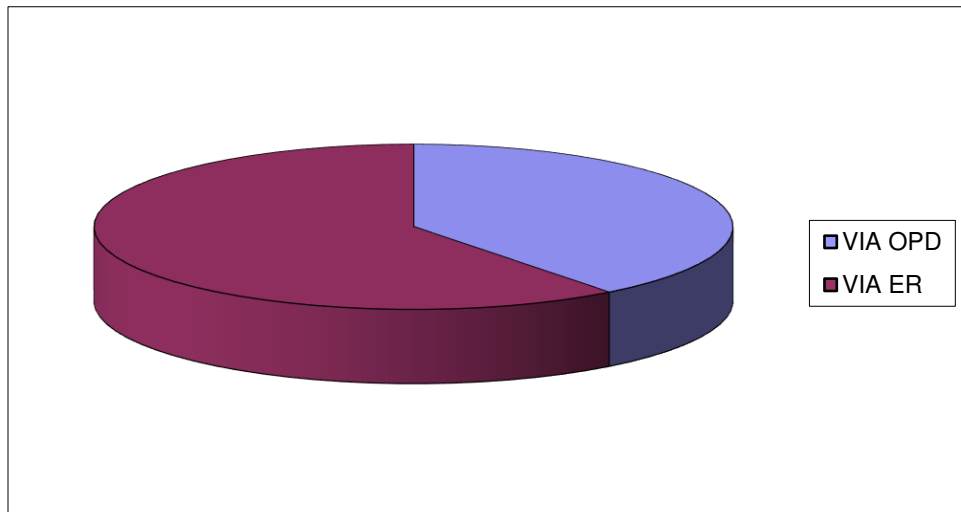
GRAPH SHOWING ADMISSION DATA IN YEAR 2020



GRAPH SHOWING ADMISSION DATA IN YEAR 2020



PIE CHART SHOWING ADMISSION DATA IN YEAR 2020



WARD INFRASTRUCTURE DEVELOPMENT

CONVERSION OF ER-POST OP ROOM TO HDU:

In the last year, a lot of renovations and infrastructure development have been done in the ward. Of special note is the conversion of ER post op room into a second **HDU**. For this purpose, state of the art equipment and beds were purchased and installed. This 6 bedded new HDU was a need of the hour as number of patients requiring monitoring was increasing day by day and our previous 4 bedded HDU was unable to cater these patients effectively.



EXTENSION OF THE LEARNING RESOURCE CENTER:

Surgical unit-1 is blessed to have a sound infrastructure for learning and teaching. Conference room of the unit was extended and state of the art furniture and audiovisual aids were installed.



UPGRADATION OF 3RD YEAR WARD CLASS ROOM:

Teaching of undergraduates has been one of the top most priorities of SU-1 and we have always tried to provide adequate teaching environment to our student. In this regard, the 3rd year ward class room was upgraded with addition of new furniture and projector installment.



EDUCATIONAL SERVICES

THIRD YEAR

FINAL YEAR

HOUSE SURGEON TRAINING

POST GRADUATE RESIDENT TRAINING

CLINICAL TEACHING OF 3rd YEAR MBBS STUDENTS

MBBS students spend 3 months on surgical floor in 3rd year. In the ward they are taught about different surgical diseases with special emphasis on history taking and clinical examination.

During rotation, they attend accident and emergency department in the evenings. There they observe I/V cannulation, urinary catheterization, nasogastric intubations, wound suturing and management of surgical emergencies.

During their rotation the students maintain their clinical record on specifically designed cards on daily bases. This card is included in their final professional assessment.

They also maintain a history taking register in each surgical ward.

Their attendance record is maintained on attendance register.

Unfortunately, during the major part of the year 2020, 3rd year classes remained suspended and online lectures and classes were conducted.

OBJECTIVES OF CLINICAL TEACHING

The Aims and objectives of third year teaching schedules are

- To give an introduction to Ward routine & setup, Teaching objectives, Clinical Classes, Evening duties, and filling up of history register and clinical card.
- To give an introduction to Surgical specialties, surgical problems elective and emergency, surgical diagnosis and diagnostic aids.
- To teach medical ethics:
- To teach Aseptic techniques, discipline in Operation theatres and wards.
- To teach Practical skills and Basic ward management.
- To teach History Taking and examination of surgical patient

CLINICAL TEACHING OF FINAL YEAR MBBS STUDENTS

Final year MBBS students spend 8 weeks in two surgical units (4 weeks each) in different batches. They attend wards for six days a week. In the ward they are taught about different surgical diseases with emphasis on history taking, clinical examination, differential diagnosis, relevant investigations, final diagnosis and treatment options. Students observe different surgical procedures in elective OT.

During their rotation, they attend accident and emergency department in evenings. Here they are taught about managing different surgical emergencies.

The objective of this clinical rotation is to improve their knowledge, clinical skills and attitude.

During their rotation they maintain their clinical record on specifically designed cards on daily basis. This card is included in their final assessment.

They also maintain a history taking register in each surgical ward.

Their attendance record will be maintained on attendance register.

OBJECTIVES OF CLINICAL TEACHING

- To develop skill of history taking and clinical examination of patients with common surgical problems
- To develop good communication skills and bedside manners while dealing with the patients
- To develop clinically oriented approach towards management of surgical patients
- To learn about management of different surgical emergencies
- To get an idea about different surgical instruments, sutures, etc.
- To observe and perform minor surgical procedures under supervision

HOUSE SURGEON TRAINING PROGRAM

House surgeons are inducted for a period of three months. They undergo extensive training for development and improvement of clinical skills with special emphasis on surgical aspect. House surgeons are rotated in the ward, ER, OPD and OT ensuring maximum clinical input. They are responsible for management of allotted patients under supervision of residents, SRs and consultants. In order to improve presentation and communication skills as well as knowledge, they are allotted the topics to be presented in “HOUSE SURGEON PRESENTATION” held on every Saturday. In addition house officers are part of different academic activities like Journal club, Long case, PBL, Audit, Mortality and morbidity meeting on regular basis.

House officers are encouraged to perform different surgical procedure under supervision of residents and SRs. In addition a workshop for teaching and improvement of surgical skills is also held for each batch, where house surgeons are taught basic surgical skills, knotting techniques and principals of sterilization in OT.

In addition to know and solve the problems of house surgeons faced in the unit during their stay in department, consultant-house surgeon meeting is conducted on regular bases in SU-1. During their 3 month stay in ward, they are encouraged to take active part in clinical research projects of ward. For this purpose a research methodology workshop is also arranged in ward to improve their basic knowledge about medical research.

POST GRADUATE TRAINING PROGRAM

Surgical unit -1 is considered one of the most prestigious unit for post graduate training. The training program is formulated to ensure that all the trainees are capable of functioning as an independent specialist by the end of training, also ensuring the excellence in administration, education and research horizons. Components of this training program are

PROBLEM BASED LEARNING

Held on every Monday includes discussion of a clinical scenario according to a pre-set standard protocol. Tasks are assigned at the end of PBL to be presented and discussed the next Monday by the trainees, thereby ensuring improvement in basic medical knowledge as well as its clinical application.

JOURNAL CLUB

Held on every Wednesday includes the presentation of recent surgical publication in national and international journals by Post graduate residents followed by comprehensive group discussion.

CASE PRESENTATION

Held every Friday, includes a comprehensive discussion on a ward case presented by post graduate resident, focusing on presentation, diagnosis, treatment modalities and recent advances, thereby ensuring not only the development of presentation and communication skills but also improving diagnostic and management capabilities in light of latest trends.

MONTHLY AUDIT

2nd Wednesday of every month is reserved for presentation of monthly audit, which helps to improve clinical performance and to sort out and address different drawbacks in patient management

LONG CASE

A long case is prepared and discussed by a senior resident on the pattern of FCPS examination, ensuring not only the development of presentation and communication skills but also preparation of FCPS-II examination. This activity is held on every alternate Saturday.

MORTALITY AND MORBIDITY MEETING

One of the Mondays of the month is attributed for discussion of monthly mortalities and morbidities which focuses on the flaw in management and improvement in the management of patients.

MEDICAL RESEARCH

PGTs are allotted different research projects in addition to their CPSP dissertation project. Monthly evaluation of these research projects is done. After completion of these projects, research papers are published in different national and international journals.

TRAINING AND CAPACITY BUILDING WORKSHOPS:

It is the tradition of Su-1 to hold a number of workshops and symposiums throughout the year to increase skills of our trainees and house officers as well as contribute to training of other doctors. During these workshops, **STRICT COVID 19 PROTOCOLS** were followed

SURGICAL SKILLS WRSHOP



MID TRAINING ASSESMENT WORKSHOP



HANDS ON WORKSHOP ON STOMA CARE



FELLOWS TRAINED BY SURGICAL UNIT-1

SUPERVISORS:

Professor Dr. Mussadiq Khan

Professor Dr. Jahangir Sarwar Khan

Professor Dr. Usman Qureshi

NAME	YEAR
DR. TANVIR FCPS, FRCS	1998
DR. TARIQ NAWAZ FCPS	1999
DR. M. RIAZ SIDDIQUE FCPS	1999
DR. ASIM IJAZ FCPS, FRCS	2000
DR. NAVEED AKHTAR MALIK FCPS	2000
DR. SHAFIQUE KHOKHAR FCPS	2001
DR. MUHAMMAD ASLAM FCPS	2001
DR. UMER FAROOQ NIAZI FCPS	2002
DR. AZMAT HASSAN FCPS	2002
DR. MUHAMMAD WAQAS RAZA FCPS, FRCS	2002
DR. QAISER ABBAS FCPS	2003
DR. USMAN QURESHI FCPS	2003
DR. GOHAR RASHEED FCPS	2004
DR. UMAR FAROOQ FCPS, MRCS	2004
DR. SHAKEEL AKHTAR FCPS, MRCS	2004
DR. QAMAR HAFEEZ KIANI FCPS, MRCS	2004
DR. AKHTAR ALI FCPS, MRCS	2004

DR. AMANULHAQ FCPS	2004
DR. ZAFAR IQBAL QAZI FCPS	2004
DR. ZAFAR IQBAL NIAZI FCPS	2005
DR. ANIS AHMAD FCPS	2005
DR. ASIFA AHMAD FCPS, MRCS	2007
DR. HUMAIRA ALTAF FCPS, MRCS	2007
DR. MUHAMMAD IFTIKHAR AHMAD FCPS, MCPS	2008
DR. MUDASSIR MAJEED FCPS, MRCS	2009
DR. AHMAD UMER FCPS, MCPS	2009
DR. MUSFIRAH SIDDIQUI FCPS, MCPS	2010
DR. SAGHEER HUSSAIN SHAH FCPS, MCPS	2011
DR. IMRAN JAVED FCPS, MRCS	2011
DR. IRAM HASSAN FCPS, MRCS	2011
DR. SAMREEN UMER KHAN FCPS	2012
DR. WAJIHA TEHNIAT FCPS, MRCS	2012
DR. ATIA MALIK FCPS	2012
DR. MUHAMMAD FAHIM FCPS, MRCS, FRCS	2013
DR. SOHAIB KHAN FCPS, MRCS, FRCS	2013
Dr. SADIA ZAMAN FCPS, MRCS	2013
Dr USAMA JALIL FCPS, MRCS	2015
Dr ZOHRA AKRAM FCPS	2015

Dr MUBASHIR NASRULLAH FCPS	2015
Dr SHAHBAZ ZAFAR FCPS, MRCS	2015
Dr HASAN ALI FCPS, MRCS	2015
Dr SALMAN SHAFIQUE FCPS, MRCPS	2016
DR UMER FAYYAZ FCPS, MRCS	2016
Dr RAHEEL AHMAD FCPS, MRCS	2018
DR RAMLAH GHAZANFAR FCPS	2018
Dr TABINDA FCPS	2018
Dr AFIYA ZULFIQAR FCPS	2019
Dr HASEEB AHMED FCPS, MRCPS	2019
Dr MUZNA IFTIKHAR FCPS	2019
Dr MUNAZZAH AZIZ FCPS, MRCPS	2019
Dr SAJID MEHMOOD FCPS	2019
Dr NAQQASH ADNAN FCPS, MRCS	2019
Dr ASMA MEHER FCPS	2019
DR USMAN AKRAM FCPS, MRCS	2020
Dr MEHWISH CHANGEZ FCPS,MRCS	2020
Dr SYED WAQAS HASAN FCPS, MRCPS	2020
Dr MAHAM TARIQ FCPS,MRCS	2020
Dr AHMED MUJTABA MALIK FCPS, MRCS	2020
Dr HAFIZ BILAL AHMED FCPS	2020

RESEARCH TOPICS OF SURGICAL UNIT-1

1. Neutrophil to lymphocyte ratio in predicting complicated appendicitis.
2. Selection decontamination of digestive tract in upper G.I surgery.
3. Evaluate diagnostic accuracy of Tokyo guide line 2013, keeping H/P as gold standard.
4. Role of prophylactic drain in patients undergoing uncomplicated lap Cholecystectomy.
5. Evaluation of post op pain in patients undergoing lap with prophylactic drain using visual analogue scale.
6. Incidence of post operative site infection in patients undergoing lap Cholecystectomy.
7. Lignocaine infiltration vs Tap in patients undergoing open appendectomy.
8. Comparison of effect of Topical vs Intravenous Tranexamic acid on mean drain output in patients undergoing modified radical mastectomy.
9. Effect of positive and negative fluid balance in causing AKI as an independent factors in critically injured patients.
10. Correlation between pathologic complete response in the breast and absence of axillary lymph node metastases after neo adjuvant systemic therapy.
11. Effect of I/V analgesia vs epidural in moderately severe pancreatitis.
12. Predicators of post operative hypocalcemia occurring after total thyroidectomy.
13. Management of bile duct injury. Experience of Tertiary care hospital.
14. Effect on quality of life and body image of breast cancer survival after mastectomy.
15. Comparison of haemorrhoidectomy Ligasure vs Milligan Morgan.
16. Bile c/s in post Cholecystectomy patients.
17. Comparison of early vs Delayed Cholecystectomy in mild biliary Pancreatitis in terms of Readmission.
18. Clinical spectrum of electric burn in terms of etiology/age and mechanism of injury in Holy Family Hospital Rawalpindi.
19. Gallstones analysis.
20. Corrosive intake, presentation and management.
21. Correlation between severity of pancreatitis and MCV.
22. Frequency of hernia at reversal stoma site.
23. To compare early vs late laparoscopic Cholecystectomy in mild biliary pancreatitis in terms of length of stay in hospital and post operative complications.
24. Impact of covid surge on surgery.
25. Development of RTLAMP Assay for Early detection of COVID-19
26. Expression analysis of HER2 in breast cancer patients and its prognostic association with disease progression.
27. Identification of Gene Signatures and their relevance with Clinicopathological Outcome in Breast Cancer Patients from Pakistan.
28. Involvement of Hedgehog Molecules in Breast Cancer Metastasis.

29. Expression Analysis of Her-2 in Breast Cancer Cohort and its Association with Clinical Features.
30. Desert Hedgehog Expression Analysis and Correlation with Breast Cancer.
31. Transcript Profiling of SCGB2A2 in Breast Cancer Cohort of Pakistan.
32. Clinical Relevance of Metaadherin Expression in Breast Cancer Metastasis.
33. Expression Analysis of PKM2 in Breast Cancer Cohort of Pakistan.
34. Expression Correlation of Hsa-mir-335-5p and GLI1 among Breast Cancer Cohort.
35. Expression Analysis of HK2 in Breast Cancer Cohort of Pakistan.
36. Identification of Molecular Subtypes of Breast Cancer in the Cohort by using QPCR.
37. Association of LDHA in Breast Cancer Cohort of Pakistan.
38. *Correlation of Differentially Expressed Genes in Glycolytic Pathway with Breast Cancer Progression.*
39. Deciphering the Role of Glycolytic Pathway Genes in Breast cancer Recurrence.
40. Expression Analysis of Sonic Hedgehog in Breast Cancer and its relationship with metastasis.
41. Investigating the potential role of nuclear dystroglycan in breast Cancer Metastasis