Expected Values Calculating:

TABLE 8: Multiply each column total by each row total and divide by the overall total:

Gender	**Patient Satisfaction from Surgery**		**Total**
	Excellent	**Negative**	
Male	$\frac{(107 \times 120)}{200}$	$\frac{(107 \times 80)}{200}$	**107**
Female	$\frac{(93 \times 120)}{200}$	$\frac{(93 \times 80)}{200}$	**93**
Total	**120**	**80**	**200**

TABLE 9: Which gives us value:

Gender	**Patient Satisfaction from Surgery**		**Total**
	Excellent	**Negative**	
Male	64.2	42.8	**107**
Female	55.8	37.2	**93**
Total	**120**	**80**	**200**

χ^2Table is given below:
In other words, we use formula **$(O-E)^2/E$,** where are-

O = **Observed** (actual) value
E = **Expected** value

TABLE 10: Observed and Excepted Value

Observed	**Expected**	**$F = (E-O)^2/E$**
90	64.2	10.3682
17	42.8	15.5523
30	55.8	11.929
63	37.2	17.8936
Total = 200	**200**	**$F = \sum(E-O)^2/E =$ 55.7431**

Chi-Square = 55.7431
Degree of Freedom:
= (rows− 1) x (columns − 1)
= (2 − 1) x (2 − 1) = 1×1
=1
P = 0

Table 11: Crude Odds Ratio Calculating:

Gender	**Patient Satisfaction from Surgery**		**Total**
	Excellent	**Negative**	
Male	90	17	**107**
Female	30	63	**93**
Total	**120**	**80**	**200**

Crude odds ratio = (90 x 63) / (30 x 17) = 11.11764
95% confidence interval: (1.07, 2.41)

We have noticed our result that in our data analytics with Chi-Square test and Crude Odds Ratio is Highly Positive Correlations. The confidence interval includes (1.07, 2.41), focused on the fact that we can't exclude the null hypothesis; we can't reject Excellent Satisfaction is associated with Patient Satisfaction from Surgery at all in our Clinical datasets.

V. MY PROJECT OBERVATION AND REPRESENTATION

From our web-based tools, we see some result with our observation. The patient datasets are represented a statistical view, reports on JSon and CSV of the project. Now tools are represented patient datasets into graphical representation of patient satisfaction.

A. Patient Dataset in CSV format:

```
Division,Satisfaction,Patient Status,Birthday.Year,Gender,Treatment Cost
Oncology,Excellent,Outpatient,Invalid date,Female,$322.00,192.00
Cardiology,Excellent,Inpatient,Invalid date,Male,$222.00,39.00
Cardiology,Negative,Outpatient,Invalid date,Female,$800.00,128.00
Cardiology,Negative,Outpatient,Invalid date,Male,$800.00,169.00
Cardiology,Excellent,Outpatient,Invalid date,Male,$800.00,116.00
Oncology,Negative,Outpatient,Invalid date,Male,$800.00,33.00
Oncology,Negative,Inpatient,Invalid date,Male,$499.00,175.00s
Oncology,Excellent,Inpatient,Invalid date,Female,$499.00,176.00
Oncology,Excellent,Inpatient,Invalid date,Female,$499.00,136.00
Oncology,Negative,Outpatient,Invalid date,Male,$800.00,99.00
Cardiology,Excellent,Inpatient,Invalid date,Male,$499.00,31.00
Cardiology,Negative,Outpatient,Invalid date,Female,$800.00,25.00
Cardiology,Negative,Outpatient,Invalid date,Male,$800.00,61.00
Oncology,Negative,Inpatient,Invalid date,Female,$499.00,151.00
Cardiology,Negative,Outpatient,Invalid date,Male,$800.00,92.00
Cardiology,Excellent,Inpatient,Invalid date,Male,$499.00,8.00
Oncology,Negative,Inpatient,Invalid date,Female,$499.00,25.00
Cardiology,Excellent,Outpatient,Invalid date,Male,$800.00,168.00
Oncology,Excellent,Inpatient,Invalid date,Female,$499.00,179.00
Cardiology,Negative,Outpatient,Invalid date,Male,$444.00,153.00
Cardiology,Excellent,Outpatient,Invalid date,Male,$444.00,74.00
Oncology,Excellent,Inpatient,Invalid date,Female,$499.00,7.00
```

Fig 4: Patient Dataset in CSV format