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Chi Square Test for Association of Attributes

(One Example)

Problem: In a hospital, a trial of medicine was done on 300 Male and 100 Female. The trial was successful on 260 male and 80 female. Test at 5 per cent level of significance whether there is an association between gender and impact of medicine.

Solution:

H_0: There is no association between gender and impact of medicine

H_a: There is association between gender and impact of medicine

Observed Frequencies (O)

Impact of medicine	Gender		Total
	Male	Female	
Successful	260	80	340
Unsucessfull	40	20	60
Total	300	100	400

Expected Frequencies (E)

Impact of medicine	Gender		Total
	Male	Female	
Successful	(A1*B1)/N=300*340/400=255	100*340/400=85	340(B1)
Unsuccessful	300*60/400=45	100*60/400=15	60 (B2)
Total	300(A1)	100(A2)	400(N)

Computation of Chi-Square

O	E	(O-E)	$(O-E)^2$	$(O-E)^2/E$
260	255	+5	25	25/255=.098
80	85	-5	25	25/85=.555
40	45	-5	25	25/45=.294
20	15	+5	25	25/15=1.667
				2.614

Chi-Square=2.614 (computed)

Degree of Freedom = (c-1)(r-1)= (2-1) (2-1)=1

at .05 level of significance Critical Value =3.841

Computed Value< Critical Value

2.614<3.841

Conclusion : H_0 accepted Ha rejected.

Interpretation: There is no association between gender and impact of medicine.

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