The high yeld

Chi square ($\chi 2$):

It is the sum of the squared difference between the observed frequency and expected frequency, divided by the expected frequency .

>Therefore, $\chi 2$ is always UPPER ONE SIDED TEST .

> Chi square is used in testing difference in proportions while t test and F test are used in testing difference in means.

> arrange the table with Exposure as the row variable and

Out come as the column variable .

> The techniques for testing hypothesis concerning

Qualitative data counting data Categorical data Discrete.

Procedure

Chi square calculation procedure

✓ Calculate the expected values E for each cell ✓Calculate the value O- E for each cell

✓ O is the observed

✓ Square O-E

✓ Divide each squared O- E by E for each cell ✓ Sum all of the values in previous step this result is called test statistic

✓ identify the critical chi-square obtained

✓ from the chi square table.

❑ To reject the null hypothesis of equal proportion i.e. of independent variables the value of the test statistics must exceed the critical chi-square obtained from the chi square table.

Continuity Correction

The chi square test for 2X2 table can be improved by using continuity correction we call it Yates continuity correction the formula become

Validity of $\chi 2$

When the expected numbers are very small the chi square test is not good enough

We recommended other test (Exact Test)

Thus$\chi 2$is valid

➢when the overall total is more than 40 , regardless the expected values

and

➢when the overall total between 20 and 40 provided that all expected values are at least 5

40,20 Total

5 expected at least 5

القوانين

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

$$E = \frac{total\ column \times total\ rows}{Grand\ \ total}$$

لجنة الطب والجراحة

The high yeld

Example

treatment, 354 individuals of them, were given drug A.
Of those given drug A only 240 patients were survived.
On the other hand only 212 patients who's given drug B
were survived can we conclude that the effectiveness of
treatment differ between two drugs (A&B) ????.

Let α 0.05

There is an **observed difference** in the **survival** rate between drug A (67.8%) and B (66.9%) .

There is **no significance** difference in the **proportion** (**rate**) of survival between two groups .

There is a **significance difference** in the survival **rate** between two type of treatment .

	drug A	drug B	tot.
survived	240	212	452
Died	114 354-240	105 317-212	219
tot.	354	317 671-354	671

Degree of freedom

d.F =
(No. of rows – 1) (No. of column – 1)
= (r – 1) (c – 1)
(2 – 1) (2 – 1) = 1

ترتيب المعطيات في الجدول هي اهم
خطوه بعد ذلك عباره هن عمليات حسابيه

expected value for each cell

$$E_{240} = \frac{354 \times 452}{671} = 238.5$$

$$E_{114} = \frac{354 \times 219}{671} = 115.5$$

$$E_{212} = \frac{452 \times 317}{671} = 213.5$$

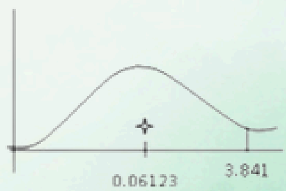
$$E_{105} = \frac{317 \times 219}{671} = 103.5$$

$$= \frac{(240-238.5)^2}{238.5} + \frac{(114-115.5)^2}{115.5} + \frac{(212-213.5)^2}{213.5} + \frac{(105-103.5)^2}{103.5}$$

$$= \frac{(1.5)^2}{238.5} + \frac{(1.5)^2}{115.5} + \frac{(-1.5)^2}{213.5} + \frac{(1.5)^2}{103.5} = \frac{2.25}{238.5} + \frac{2.25}{115.5} + \frac{2.25}{213.5} + \frac{2.25}{103.5}$$

$$= 0.009434 + 0.0195 + 0.01056 + 0.02174$$

$$= 0.061234$$



Conclusion

Calculated x' fall in Accept Region → so
We not reject (accept) Ho .
There is no significance difference in proportion of survival
rate between two drugs
P > 0.05
Calculated x' less than tabulated x'
chance factor increases,
influencing factor decrease