



# Biostatistics

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Archive

Lecture 16

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1. Concerning Chi square test all the following statements are true EXCEPT? Select one:

- a. Applied when we have absolute frequencies.
- b. It is used when we have two groups of population.
- c. Cannot be applied when we have proportion rate alone
- d. It is used when we have more than two groups of population
- e. Degree of freedom is always equal to 1

**Answer: E. Degree of freedom is always equal to 1**

2. One of the following statements concerning Chi square test is correct:

- A. The tabulated value depends on sample size
- B. It depends on both the observed and the expected values of each cell
- C. It is used for qualitative data
- D. The expected value of each cell must be greater than the observed value
- E. Degree of freedom in its case is  $N - 1$

**Answer: B. It depends on both the observed and the expected values of each cell**

3. Degree of freedom in applying chi square test of  $4 \times 4$  contingency table is:

- A. 16
- B. 1
- C. 6
- D. 4
- E. 9

**Answer: E. 9**

4.  $C \times R$  table is well known as:

- a. Table of an association
- b. Contingency table
- c. Cross- tabulation table
- d. All of the above

**Answer: d. All of the above**

5. All of the following are correct statements concerning the Chi square test except:
- Chi square is usually upper one- sided test
  - Degree of freedom depends on numbers of both columns and rows
  - The tabulated value depends on the degree of freedom
  - Chi square depends on both the observed and the expected values
  - None of the above is incorrect

**Answer: A. Chi square is usually upper one- sided test**

6. All of the following are correct statements concerning the Chi square test except:
- Chi square is always upper one- sided test
  - Degree of freedom depends on numbers of both columns and rows
  - The tabulated value depends on the degree of freedom
  - Chi square depends on both the observed and the expected values
  - Chi square test is used for continuous data

**Answer: E. Chi square test is used for continuous data**

7. Concerning Chi square test all the following statements are true EXCEPT? Select one:
- The degree of freedom is  $(c-1) \times (r-1)$
  - Applied in qualitative data
  - Can be applied when we have proportion rate alone
  - It is used when we have more than two groups of population
  - It is used when we have two groups of population

**Answer: C. Can be applied when we have proportion rate alone**

8. In Chi square test, the tabulated Chi square value depends on:
- The product of  $(c-1) \times (r-1)$
  - Level of significance and degree of freedom
  - The designated level of  $\alpha$
  - The difference between O and E
  - The expected value for each cell

**Answer: B. Level of significance and degree of freedom**

9. In Chi square test, the null hypothesis could be rejected if:

- The expected value for each column is equal to the expected value of the corresponding row
- The difference between the observed and the expected values for each cell is large
- The observed value for each cell is equal to zero
- The difference between the observed and the expected values for each cell is small
- The expected values in all cells are equal

**Answer: B. The difference between the observed and the expected values for each cell is large**

10. One of the following statements is correct in Chi square test:

- One not rejects the alternative hypothesis when there is no significant difference
- Null hypothesis uses proportion one equals proportion two
- Alternative hypothesis uses proportion one equals proportion two
- Null hypothesis uses proportion one does not equal proportion two
- Null hypothesis uses mean one equals mean two

**Answer: B. Null hypothesis uses proportion one equals proportion two**

11. The following table presents the distribution of women according to the care received during pregnancy and the complications experienced during delivery.

Care Received	Complications		Total
	Present	Absent	
No	50	90	140
Yes	20	140	160
Total	70	230	300

The expected value for women who did not receive care and experienced complications during delivery is equal to:

- $(70 \times 230) \div 300$
- $(70 \times 140) \div 300$
- $(50 \times 20) \div 70$
- $(70 \times 50) \div 300$
- $(70 \times 50) \div 240$

**Answer: B.  $(70 \times 140) \div 300$**



12. The following table presents the distribution of 1000 women suffering from cystitis according to the prescribed antibiotic therapy as well as the treatment outcome

Treatment Outcome	Prescribed Antibiotic			Total
	TMP- SMX	Amoxicillin	Cyclacillin	
Cured	110	60	130	300
Improved	105	150	210	465
Not cured	35	90	110	235
Total	250	300	450	1000

The expected value for those who have been cured by amoxicillin is:

- a. 18
- b. 60
- c. 90
- d. 70.5
- e. 139.5

Answer: C. 90

13. The following table presents the distribution of 1000 women suffering from cystitis according to the prescribed antibiotic therapy as well as the treatment outcome

Treatment Outcome	Prescribed Antibiotic			Total
	TMP- SMX	Amoxicillin	Cyclacillin	
Cured	110	60	130	300
Improved	105	150	210	465
Not cured	35	90	110	235
Total	250	300	450	1000

The degree of freedom of the test statistics is:

- a. 997
- b. 1
- c. 4
- d.  $\alpha$
- e. 6

Answer: C. 4

14. A study was conducted to detect the relationship between the body weight and the average time spent on TV per day in youngsters. A level of significance of 0.05 was used. Assuming there is no relationship between body weight and time spent on TV, the expected value of children weighing more than 10 IBs who watch 3-6 hours a day will be:

- a. 9.12
- b. 5
- c. 9
- d. 5.76

	<3 hours	3-6 hours	>6 hours	Total
Average weight above 10 IBs	4	9	6	19
Average weight equals 10 IBs	7	10	2	19
Average weight below 10 IBs	2	5	5	12
Total	13	24	13	50

Answer: a. 9.12

15. In a study to determine the influence of maternal smoking on newborns birth weights, a sample of 800 pregnant women was selected. Of the 150 smoking mothers, 50 had low birth weight babies compared to 80 low birth weight babies in the none-smoking mothers. The expected value of the 50 low birth weight mothers will be:

- A. 24.37
- B. 570
- C. 32.5
- D. 49

Answer: A. 24.37

\*\* the contingency table was not given, fill it first to solve the question\*\*

16. All of the following are correct statements concerning the Chi square test except:

- a. Chi square is always an upper one- sided test
- b. Degree of freedom depends on numbers of both columns and rows
- c. The tabulated value depends on the degree of freedom
- d. Chi square depends on both the observed and the expected values
- e. Chi square is used with continuous data

Answer: E. Chi square is used with continuous data

17. Degree of freedom of a  $5 \times 6$  contingency table will be:

- a. 30
- b. 31
- c. 20
- d. 21

Answer: C. 20

18. You obtained a statistically not significant result in a chi square test. The only correct statement that supports this finding is:

- a.  $H_0: P_1 = P_2 = P_0$
- b.  $H_A: P_1 \neq P_2 \neq P_0$
- c. reject null hypothesis
- d. accept alternative hypothesis

Answer: A.  $H_0: P_1 = P_2 = P_0$

