

Report on Medication Effectiveness Study

To assess the effectiveness of a new medication in treating a specific disease compared to a placebo. Two groups, Medication and Placebo, each consisting of 100 participants, were observed. The focus was on improvement rates to determine if the medication had a significant impact.

The chi-square test was chosen due to the categorical nature of the data—improvement (yes/no) in two groups. This test is suitable for analysing associations between categorical variables, making it ideal for comparing the effectiveness of the medication and placebo.

Group	Improvement	No improvement	Total
Medication	80	20	100
Placebo	30	70	100

Methodology and Hypothesis Testing

The null hypothesis (H_0): posited no significant difference in improvement rates between the Medication and Placebo groups.

The alternative hypothesis (H_1): suggested a significant difference.

The chi-square test was employed to assess if the observed differences were beyond what could occur by chance alone.

Results and Significance

Based on the chi-square test results with a p-value of 1, there is a high probability that the observed difference in improvement rates between the Medication and Placebo groups is due to chance alone. The lack of statistical significance suggests that the variation in outcomes is not attributed to the effectiveness of the medication but rather reflects random fluctuations within the study sample.