

COURSE VALIDATION STUDY

Target Course: VN 101 Self-Care Fundamentals and Pharmacology
Prerequisite: MATH 050

The following is statistical data on the validation of the following course prerequisite:
Successful completion of MATH 050 as a prerequisite for VN 101.

VN101 Success Recode * MATH050 Success Recode Crosstabulation

Count

		MATH050 Success		Total
		NO	YES	
VN101 Success	NO	11	4	15
	YES	19	6	25
Total		30	10	40

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.036(b)	1	.850		
Continuity Correction(a)	.000	1	1.000		
Likelihood Ratio	.035	1	.851		
Fisher's Exact Test				1.000	.568
Linear-by-Linear Association	.035	1	.852		
N of Valid Cases	40				

a Computed only for a 2x2 table

b 1 cells (25.0%) have expected count less than 5. The minimum expected count is 3.75.

Chi-Square Measurement:

The *Chi-Square* measurement tests the hypothesis (*null hypothesis*) that there is “*no difference*” between the two groups. In order to reject this hypothesis and conclude that there is a statistically significant difference between the two groups Chi-Square must be greater than **3.84**. To ensure the validity of the Chi-Square test there is a minimum frequency threshold for a 2x2 table that should be obeyed. If any of the observed frequencies in the cross-tabulation table are **5 or below** than the validity of the Chi-Square measurement is questionable.

CHI-SQUARE = .036 FAIL TO REJECT NULL HYPOTHESIS

Fisher's Exact Measurement:

The *Fisher's Exact* measurement can be used as an alternative to the Chi-Square measurement where a large sample is difficult to obtain. In order to reject the null hypothesis and conclude that there is a statistically significant difference between the two groups Fisher's Exact must have a P-value **less than** the standard **.05**.

FISHER'S EXACT = 1.000 FAIL TO REJECT NULL HYPOTHESIS

Ratio:

The ratio to be measured is the ratio of *right response:wrong response*.

A *right response* would be nonsuccess in the prerequisite course combined with nonsuccess in the target course or success in the prerequisite course combined with success in the target course. A *wrong response* would be nonsuccess in the prerequisite course combined with success in the target course or success in the prerequisite course combined with nonsuccess in the target course. For the *study ratio* to meet the *ratio criteria* it must be greater than or equal to **2:1**.

RATIO: $11+6:19+4 = 17:23$ FAILED CRITERIA

Percent Increase:

Percent increase is measured by subtracting the percent success before adjusting for the prerequisite from the percent success after adjusting for the prerequisite. For the *study percent increase* to meet the *percent increase criteria* there must be a difference greater than or equal to **10%** in the positive direction.

PERCENT INCREASE: FAILED CRITERIA

25/40 = 63% Before Prerequisite

6/10 = 60% After Prerequisite

Summary

A total sample of 100, with at least 20 students in the non-successful group for the target course is recommended. In this case the total sample is insufficient (40), and the number in the non-successful group is below the recommended level (15). Both the chi-square test and the Fishers Exact test fail to reject the null hypothesis that success in MATH 050 is independent of success in VN 101, showing that there is no statistical evidence that MATH 050 is necessary for success in VN 101. MATH 050 also fails both the Ratio and Percent Increase criteria. At this time there is no statistical evidence that MATH 050 is suitable as a prerequisite for VN 101. A new analysis with additional data is recommended at a later date to increase the sample size.