

THE OPEN UNIVERSITY OF SRI LANKA
DEPARTMENT OF NURSING
ACADEMIC YEAR 2022/2023 – SEMESTER I
MASTER OF SCIENCE IN NURSING



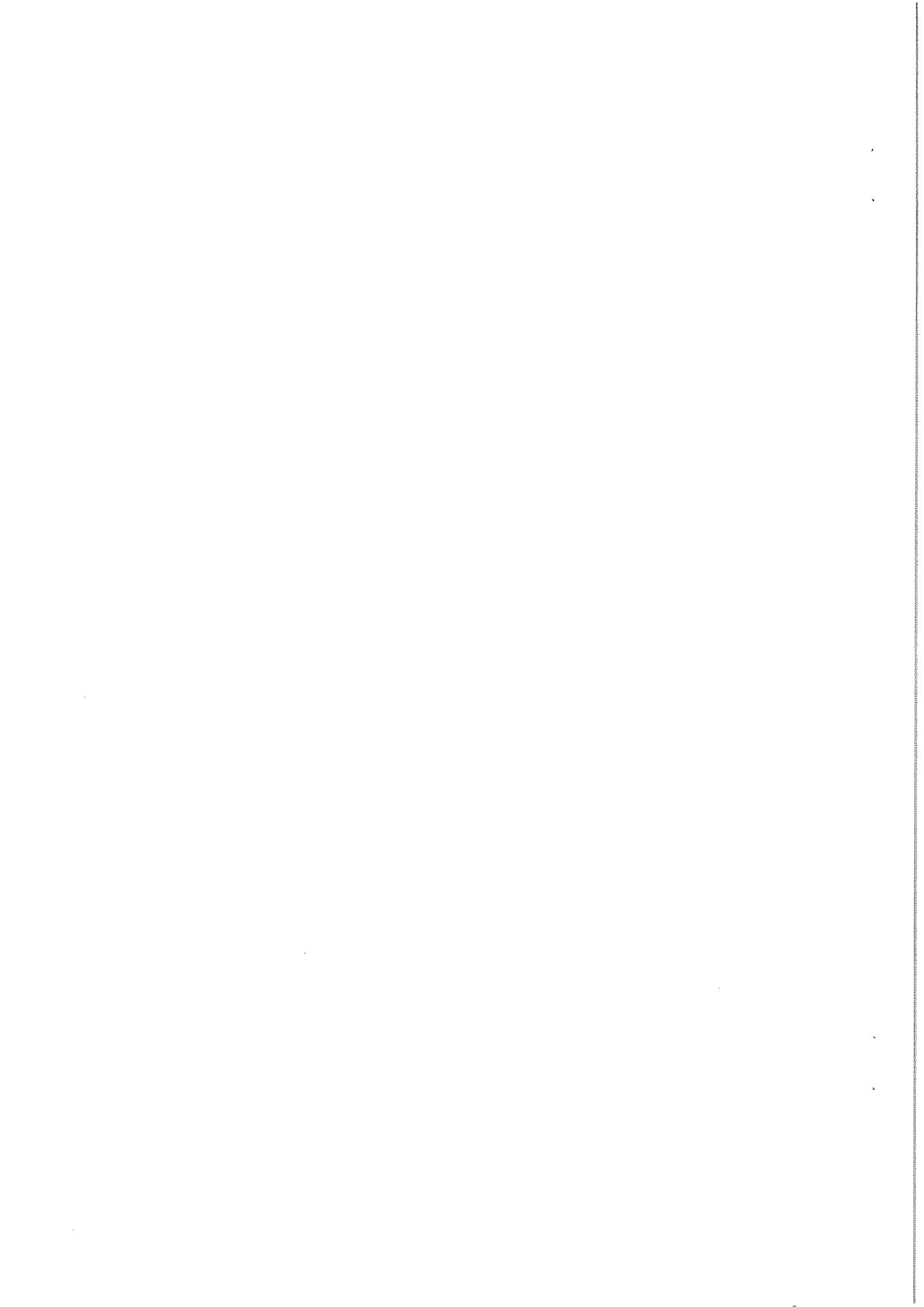
NGP9306 STATISTICS FOR EVIDENCE BASED NURSING PRACTICE- LEVEL 9
FINAL EXAMINATION

Date: 30.06.2022

Time: 9.30AM- 12.30PM

Index Number

Duration: 03 hours



Part B— Short Answer Questions (50 Marks)

Q1:

The following table shows the association between gender and preference to dialysis treatment. Answer the following questions with relevant calculations using the given data in the table.

Gender			
	Male	Female	Total
Preference to dialysis treatment			
Yes	75	25	100
No	50	60	110
Total	125	85	210

1.1 What is the difference between odds ratio and relative risk? (2 Marks)

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1.2 What is the probability of a man preferring to choose dialysis treatment (Round the answer to two decimal places)? (2 Marks)

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1.3 What is the probability of a woman preferring to choose dialysis treatment (Round the answer to two decimal places)? (2 Marks)

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1.4 How likely is that men prefer to choose dialysis treatment compared to women (relative risk)? **(2 Marks)**

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1.5 Write a conclusion by interpreting your final result. **(2 Marks)**

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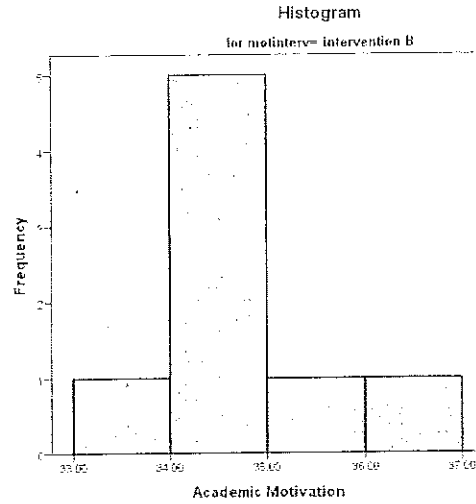
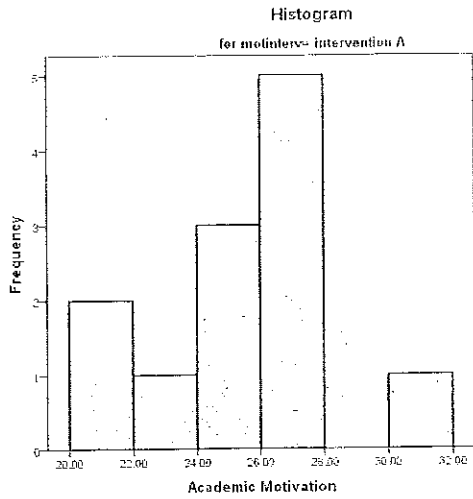
(Total=10 Marks)

Q2:

A researcher calculated the descriptive statistics and derived SPSS Output is given below. Using the statistics given, judge and justify the distribution (normal or not normal) of motivational intervention A and B with rules used assess normality?

Descriptives					
	Motivational Intervention		Statistic	Std. Error	
	Academic Motivation	intervention A	Mean	25.5265	.78663
95% Confidence Interval for Mean			Lower Bound	23.7951	
			Upper Bound	27.2578	
Median			26.0135		
Variance			7.425		
Std. Deviation			2.72496		
Minimum			21.43		
Maximum			31.90		
Range			10.47		
Interquartile Range			2.67		
Skewness		.692	.637		
Kurtosis		2.171	1.232		
intervention B		Mean	34.5069	.32007	
		95% Confidence Interval for Mean	Lower Bound	33.7501	
	Upper Bound		35.2638		
	Median	34.2609			
	Variance	.820			
	Std. Deviation	.90530			
Minimum	33.14				

		Maximum	36.23	
		Range	3.09	
		Interquartile Range	.94	
		Skewness	.683	.752
		Kurtosis	1.489	1.481



2.1 For intervention A:

(5 Marks)

Judgement

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2.2 For intervention B:

(5 Marks)

Judgement

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(Total=10 Marks)

Q3:

A researcher intends to assess the relationship between gender and quality of life score measured by validated SF-36 instrument in people with heart failure.

3.1 Develop null hypothesis and alternate hypothesis for above research. **(3 Marks)**

H₀:.....

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H₁:.....

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3.2 Write **three (03)** assumptions that are used when performing independent sample t test.

(3 Marks)

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3.3 Upon completion of data collection, the researcher analysed data using independent sample t test to assess the relationship between gender and quality of life. SPSS output of statistical analysis is given below. $p < 0.05$ considered as statistically significant.

Group Statistics					
	Gender	N	Mean	Std. Deviation	Std. Error Mean
Quality of Life	identified male	223	3.4170	1.13810	.07621
	identified female	181	3.7947	1.16946	.08693

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Quality of Life	Equal variances assumed	.086	.769	-3.276	402	.001	-.37762	.11528	-.60424	-.15100
	Equal variances not assumed			-3.266	380.700	.001	-.37762	.11560	-.60492	-.15032

3.3.1 Write null and alternate hypothesis for Levene's test and state your decision based on Levene's test. (2 Marks)

H₀:

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H₁:

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3.3.2 Decision: (2 Marks)

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3.4 Write a statistical interpretation summary by mentioning the appropriate results of the above statistical test. (5 Marks)

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(Total=15 Marks)

Q4:

A researcher intends to assess the association between ethnicity and preference to online learning.

4.1 Write down the null hypothesis and alternate hypothesis for the above research statement.

(3 Marks)

H₀:.....

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H₁:.....

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4.2 Write **three (03)** assumptions that are used when performing Pearson's chi-square (χ^2) test of independence. **(3 Marks)**

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4.3 Upon completion of data collection, the researcher analysed data using Pearson's chi-square (χ^2) test to assess the association between Ethnicity and status of preference to online learning. A $p < 0.05$ set as statistically significant. SPSS output of statistical analysis is given below.

Ethnicity * Online learning Crosstabulation

		Online learning		Total	
		Favour	Oppose		
Ethnicity	Sinhala	Expected Count	89.0	41.0	130.0
		% within Online learning	16.5%	9.0%	14.1%
	Tamil	Expected Count	288.3	132.7	421.0
		% within Online learning	43.5%	50.7%	45.8%
	Muslim	Expected Count	218.4	100.6	319.0
		% within Online learning	34.3%	35.5%	34.7%
	Other	Expected Count	34.2	15.8	50.0
		% within Online learning	5.7%	4.8%	5.4%
Total	Expected Count	630.0	290.0	920.0	
	% within Online learning	100.0%	100.0%	100.0%	

Chi-Square Tests

	Value	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.617 ^a	.014
Likelihood Ratio	11.277	.010
Linear-by-Linear Association	1.602	.206
N of Valid Cases	920	

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 15.76.

4.4.1 Calculate the degrees of freedom for the Pearson's chi-square (χ^2) test. **(2 Marks)**

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4.4.2 State your decision on hypothesis based on the Pearson's chi-square (χ^2) test output. **(2 Marks)**

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4.4.3 Write a statistical interpretation summary by mentioning the appropriate results of the above statistical test. **(5 Marks)**

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(Total=15 Marks)

Part C – Structured Essay Questions (20 Marks)

Q1:

Data management is an important aspect of data analysis. Briefly explain how you would prepare the data collected for a quantitative study (data management steps) before data analysis begins.

(10 Marks)

Q2:

Ideally, researchers interested in understanding the characteristics of a defined population. However, in most instances, it is impossible to collect information on entire population and use a sample of the population instead. Briefly explain **two (02)** reasons for selecting a sample instead of studying entire population and **three (03)** reasons for existing variability between sample statistics and population parameters with related examples.

(10 Marks)