Nurs 717

HW #3

**Question 1)** The following is a tumor size for two different type of breast cancer.

**(each part 2.5-point total 10 point)**

|  |  |  |  |
| --- | --- | --- | --- |
| Type of tumor | n | X` | s |
| I | 20 | 3.5 | 1.80 |
| II | 15 | 2.7 | 1.50 |

1. What is a 95 percent confidence interval for type I of tumor? (Use Xbar +/- t(n-1)alpha/2 ( T value from T table) \* S / square root of n)
2. 2.66 and 4.34
3. 4.50 and 5.67
4. 3.5 and 6.39
5. 1.87 and 3.53
6. What is a 95 percent Confidence interval for type II of tumor? (Use Xbar +/- t(n-1),1-alpha/2 ( T value from T table) \* S / square root of n)

1. 2.66 and 4.34

2. 4.50 and 5.67

3. 3.5 and 6.39

4. 1.87 and 3.53

c) Is the following interpretation for part a and b are true or false: The results indicate that we have 95% confidence that the true mean of tumor size for type I and Type II are (2.66, 4.34) and (1.87,3.53); Respectively.

1. True
2. False
3. What is a 99 percent confidence interval for the difference between populations mean? (First find S pooled by using S2p= (n1-1) \* S21 + (n2-1) \* S22/ n1 +n2 -2 then use xbar1-xbar2 +/- T ( n1+n2-2,1-alpha/2 ( t value from T table) \* square root of (s2p/n1 + s2p/n2))
4. .66 and 4.34
5. .50 and 3.67
6. -.76 and 2.36
7. -1.87 and 5.53

**Question 2)** In a survey to identify of risk factors for heart disease among men and women were asked about if they ever smoke. Of the 430 men, 116 said they smoke. Of the 380 women, 73 said they smoke**. (Each parts 2 points for total 12 points)**

1. What is the proportion for smoker for men? (Use P = x/n)
2. .30
3. .27
4. .50
5. .20
6. What is the proportion for smoker for women? (Use P = x/n)

1. .30

2. .27

3. .50

4. .19

1. What is a 95 percent confidence interval for the proportion smoker for men? (Use p +/- Z 1-alpha/2 ( find Z value from Z table) \* square root of P\* (1-.p)/ n. Use P .2698 four digit to get exact value. Otherwise, yours would be a little off)

1. .23 and .31

2. .37 and .45

3. .15 and .23

4. .10 and .30

1. What is a 95 percent confidence interval for the proportion smoker for women? (Use p +/- Z 1-alpha/2 ( find Z value from Z table) \* square root of P\* (1-.p)/ n. Use P .1921 four digit to get exact value. Otherwise, yours would be a little off)

1. .23 and .31

2. .37 and .45

3. .15 and .23

4. .10 and .30

e) Is the following interpretation for part c and d are true or false: We have 95 percent confidence that the true proportions of smoker for men is between .226 and .3136. Also, there is 95 % confidence that the true proportion of smoker for women is between .153 and .231.

1. False
2. True
3. f) What is a 90 percent confidence interval for the difference between the proportion populations for smoker? (Use p1 – p2 +/- Z 1-alpha/2 ( find Z value from Z table) \* square root of P1\* (1-.p1)/ n1 + P2 \* (1-P2)/n2). Use P1= .2698 and P2 =.1921 four digit to get exact value. Otherwise, yours would be a little off)

1. .03 and .13

2. .10 and .40

3. .20 and .43

4. .05 and .50

**Question3**) Let say a researcher who studied on a chronic disease hospital outpatient. The following are the information researcher find from 49 records. The average outpatient visits per patients was 6 and the population standard of deviation of 3. (**(each part 3 point total 9 point )**

1. What statistical test researcher should use?
2. One proportion test
3. One sample Z-test when population variance is unknown
4. One sample Z-test when population variance is known
5. None of above
6. If researcher want to conclude that the population mean is greater than 5 visits per patients what is the value of Z statistics? (Use Z= xbar – Mu/ sigma / square root of n)
7. 5.6
8. 2.33
9. -3.5
10. -4.5
11. Can a researcher conclude that the population mean is greater than 5 visits per patients? Let alpha be at .05.
12. Yes, because our test statistics is greater than Z value from Z table
13. No, because our test statistics is less than Z value from Z table

**Question4)** Let say a researcher who studied on daily caloric intake for certain adult population. A research take a sample of 36 had the mean of 1900 with the sample standard deviation of 100. **(Each parts 3 points for total of 9 points)**

a) What statistical test researcher should use?

1. One proportion test

2. One sample T-test when population variance is unknown

3. One sample T-test when population variance is known

4. None of above

b) If researcher want to conclude that the population mean of caloric intake is greater than 1801 what is the value of T statistics? (Use t= xbar – Mu/ S / square root of n)

1. 5.97
2. 2.33
3. -3.5
4. -4.5

c) Can a researcher conclude that the population mean of caloric intake is greater than 1801? Let alpha be at .01

1. Yes, because our test statistics is greater than T value from T table

2. No, because our test statistics is less than T value from T table

**Question 5)** The following is a physical activity score for two groups in study. The higher score means the more physical activity

**(Part a and b 3 points and part c and d 1.5 point)**

|  |  |  |  |
| --- | --- | --- | --- |
| Group | n | X` | s |
| Control | 100 | 40 | 8 |
| Intervention | 100 | 50 | 10 |

a) What statistical test researcher should use?

1. Two sample T-test when population variance is known

2. One sample T-test when population variance is unknown

3. One sample T-test when population variance is known

4. Two samples T-test when population Variance is unknown

b) What is the Pooled variance for these two groups? (Use S pooled by using S2p= (n1-1) \* S21 + (n2-1) \* S22/ n1 +n2 -2)

1. 82
2. 2.80
3. 1.50
4. 2.00
5. c) What is the value of T statistics? (use xbar1-xbar2 – 0 divided by square root of (s2p/n1 + s2p/n1))
6. -5.60
7. -3.00
8. 5.60
9. -7.81

d) Can we conclude the mean of physical activity is different for intervention as compare to control at alpha .01?

1. Yes, because our absolute test statistics is greater than T value from T table

2. No, because our absolute test statistics is less than T value from T table

**Question 6)** A researcher conducted *on a new drug a study on glucose level (A1C) of adult in one clinic. She use ten* patients and measure the glucose level (A1C) at baseline and measure the same patient after three months. The following is the information for ten patients:

**Calculate by hand or use the output to answer the questions (each part 3-point total 9 point)**

|  |  |  |
| --- | --- | --- |
| **A1C level** | | |
| **Patient** | **Baseline** | **3 months** |
| 1  2  3  4  5  6  7  8  9  10 | 120  130  120  110  132  125  135  145  170  115 | 100  110  90  95  120  100  120  110  120  95 |
|  |  |  |

| **N** | **Mean** | **Std Dev** | **Std Err** | **Minimum** | **Maximum** |
| --- | --- | --- | --- | --- | --- |
| 10 | -24.2000 | 11.4872 | 3.6326 | -50.0000 | -12.0000 |

| **Mean** | **99% CL Mean** | | **Std Dev** | **99% CL Std Dev** | |
| --- | --- | --- | --- | --- | --- |
| -24.2000 | -36.0053 | -12.3947 | 11.4872 | 7.0954 | 26.1634 |

| **DF** | **t Value** | **Pr > |t|** |
| --- | --- | --- |
| 9 | -6.66 | <.0001 |

a) What statistical test researcher should use?

1. One proportion test

2. One sample T-test when population variance is unknown

3. One sample T-test when population variance is known

4. One paired sample T-test

b) What is the value of T statistics?

1. -6.65
2. -1.56
3. 3.56
4. 2.56
5. Can we conclude based on these data that the new drug improves patient glucose level at alpha .01?

1. Yes, because our absolute test statistics is greater than T value from T table

2. No, because our absolute test statistics is less than T value from T table

**Question 7)** In a study designed to compare a new treatment to quit smoking for adults as compared to the standard treatment, 70 of 100 subjects who received the standard treatment responded favorably. Of the 100 subjects who received the new treatment 80 responded favorably**. (each part 3-point total 9 point)**

a) What statistical test researcher should use? (Use Z= P1-p2 / square root of (pbar\* (1-pbar) \* 1/n1 +1/n2) where Pbar = x1 +x2 / n1+n2).

1. One proportion test

2. Two Proportion population test

3. One sample T-test when population variance is known

4. Two sample T-test

b) What is the value of Z statistics?

1. 3.50
2. 2.90
3. 1.63
4. 0.50

C) Can we conclude based on these data that the proportion of quitting smoking with new treatment is greater than standard treatment at alpha .01?

1. Yes, because our test statistics is greater than Z value from Z table

2. No, because our test statistics is less than Z value from Z table

**Question 8**) A simple random sample of 20 patients who participate on the level of anxiety took a survey to measure anxiety. The variance of Sample for test was 1600. We want to know if we can conclude from this data that the population variance is different from 2000 at alpha .05. **(each part 3 point total 9 point )**

a) What statistical test you should use?

1. One proportion test

2. One population variance

3. One sample T-test when population variance is known

4. Two sample T-test

b) what is the value of Chi-square statistics? (Use X2 = (n-1)\* S2/sigma square)

1. 13.50
2. 15.20
3. 12.50
4. 11.28

c) Can we conclude from this data that the population variance is different from 2000 at alpha .05?

1. Yes, because our test statistics is greater than chi-square value from chi-square table

2. No, because our test statistics is less than chi-square value from chi square table

**Question 9**) Two simple random samples of 10 males and 15 females who participate level of anxiety took a survey to measure anxiety level. The sample variance for male was 1369 and for female was 1681. We would like to know if these data provide us sufficient evidence that the variance of anxiety for female population is greater than male population at alpha =.05. **(each part 3 point total 9 point)**

a) What statistical test you should use?

1. One proportion test

2. One population variance

3. One sample T-test when population variance is known

4. Two population variance

1. What is the value of F statistics? (Use F= S21/S22)
2. 3.50
3. 5.00
4. 2.50
5. 1.23

c) Can we conclude from this data provide us sufficient evidence that the variance of anxiety for female population is greater than male population at alpha =.05.

1. Yes, because our test statistics is greater than F value from F table

2. No, because our test statistics is less than F value from F table

**Question 10)** Using the “Factors related to childbirth satisfaction” article answer the following questions: **(each part 3 point total 9 point )**

1. What are the mean and confidence interval for labor pain? (See Table1).
2. Mean of 28.78 with 95 % CI 2.4-55.18
3. Mean of 155.48 with 95% CI 102.16 -208.80
4. Mean of 142.28 with 95% CI 104.40- 180.16
5. Mean of 12.63 with 95 % CI 7.35- 17.91
6. What are the mean and confidence interval for overall global satisfaction? (See Table1).

1. Mean of 28.78 with 95 % CI 2.4-55.18

2. Mean of 155.48 with 95% CI 102.16 -208.80

3. Mean of 142.28 with 95% CI 104.40- 180.16

4. Mean of 12.63 with 95 % CI 7.35- 17.91

1. What is confidence interval for total childbirth satisfaction by education? (see Table 2).

1. 95 % CI 22.4-55.18 for less HS and 3.05-12.98 for College and more

2. 95% CI 102.16 -208.80 for less HS and 13.05-13.98 for College and more

3. 95% CI 10.21- 12.90 for less HS and 13.05-13.98 for College and more

4. 95 % CI 7.35- 17.91 for less HS and 3.05-12.98 for College and more

**Question 11)** Use the “Factors Related to Smoking in College Women” article to answer the following questions: **(each part 3 point total 6 point )**

1. What statistical test do you think use for table 2?

1. One proportion test

2. One population variance

3. One sample T-test when population variance is known

4. Two sample T-test

1. What is the least P value on table 2 which variables significant by smoking status?
2. .0022
3. .9597
4. .1534
5. .0036