Report 2.0

A CASE STUDY ON THE EFFECTS OF INFECTION ON THE LENGTH OF STAY IN THE HOSPITAL FOR BABIES

INTRODUCTION

Adult and pediatric patients have an approximately 2-5% chance of a surgical site infection (SSI) following a surgical procedure (Kulaylat AN *et al,* 2016). These infections when present are associated with increased morbidity, mortality, cost of care and length of stay (Ban KA *et al*, 2017). Neonates of extremely low birth weight are at elevated risk of getting SSI (Segal I et al, 2014).

This report seeks to find out if babies who had an infection after surgery ended up having a longer stay in the hospital. The average length of stay for babies who had infection and babies who did not will be compared. The study will make use of data collected from a hospital containing information on 141 babies who were admitted to the hospital.

METHOD

The data was investigated for missing values then the frequency histogram chart was used to check the data distribution of variables. The data in 'infect' which tells whether a baby had an infection is a string data type and to enable SPSS analysis it was coded into '1' for 'Yes' and '2' for 'No. Descriptive statistical analysis was carried out , then the Mann Whitney-U test was used to compare the mean rank of length of stay for the two groups in order to accept or reject the hypothesis.

Hypothesis for length comparison:

H_1 = Babies with infection have longer hospital stay.

H_0 = Hospital stay is same for all babies irrespective of whether they have infection.

RESULT

The graph below (***fig. 2.1)*** shows the histogram of the frequency distribution of length of stay. The distribution is skewed.

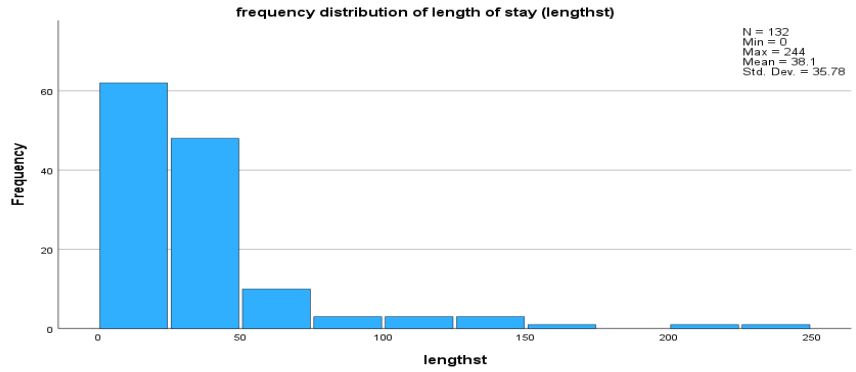


fig. 2.1

The graph below (***fig. 2.2***) shows a Q-Q plot of the skewed distribution of length of stay.

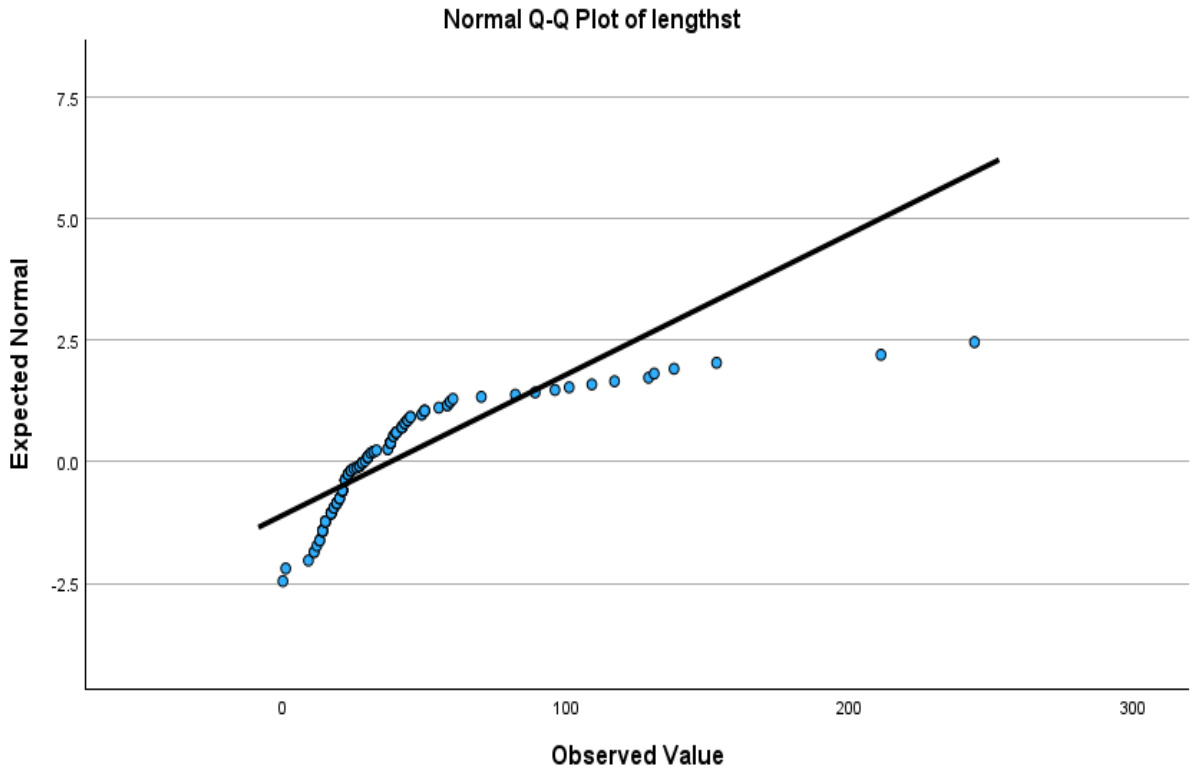
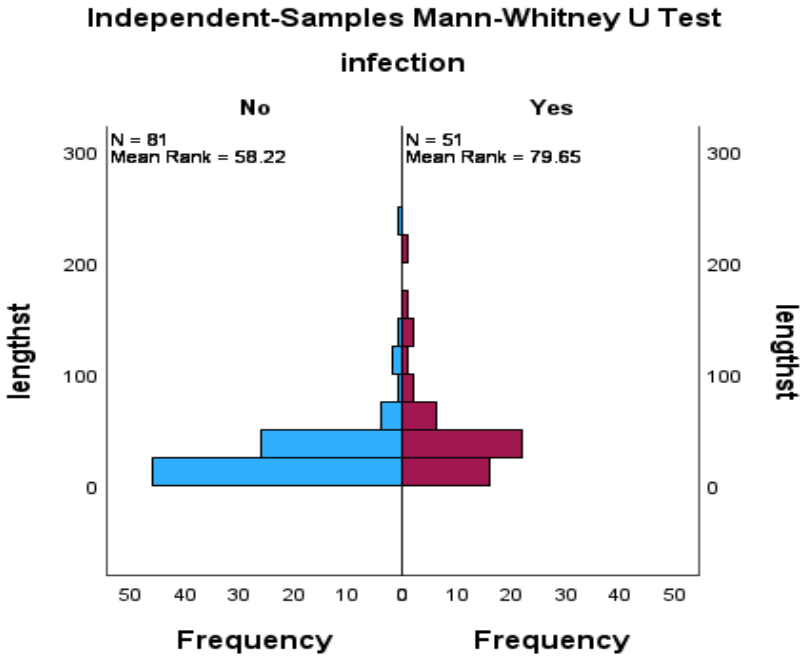


fig. 2.2

The histogram and Q-Q plot show that the data does not have a normal distribution. There were missing values which were not replaced.

Descriptive statistics
The observed mean is 38.10 while standard deviation is 35.78. The number of sample N used for the analysis is 141.

Comparing the mean rank for babies that had infection (group 1) and babies that didn't (group 2), group 1 has a higher mean rank of 79.65 than group 2 (58.22). The Mann- Whitney U test gives a test statistic of 1395.00 and a significant p value of 0.002 at 95% confidence interval (S.E = 236.34).



DISCUSSION

There is a clear relationship between babies' length of stay in the hospital and their infection status. Babies who had an infection had a longer stay in the hospital. The mean

rank for babies that had infection was 79.65 which is significantly higher than that of babies without infection.
The findings of the study agree with previous studies and findings.

There were a lot of missing values in the data for length of stay and this could have impacted on the result as we do not know why the data was not collected. The study also failed to answer the question why there were babies who had an infection yet had a short stay in the hospital, could it be they died?

The Nonparametric Mann-Whitney U test was used to test this hypothesis because the comparison is between two independent groups and the distribution of the date deviates from normal.

CONCLUSION

Having an infection after surgery makes a baby stay longer in the hospital.
Future studies could try to capture whether patients died or discharged alive to better understand the relationship between infection and length of hospital stay.

REFERENCES

Kulaylat AN, Engbrecht BW, Rocourt DV, Rinaldi JM, Santos MC, Cilley RE, et al. (2016) 'Measuring surgical site infections in children: comparing clinical, electronic, and administrative data'. *J Am Coll Surg.* 222:823–30.

Ban KA, Minei JP, Laronga C, Harbrecht BG, Jensen EH, Fry DE, et al. (2017) 'American college of surgeons and surgical infection society': surgical site infection guidelines, 2016 Update. *J Am Coll Surg.* 224:59–74.

Segal, I. *et al.* (2014) 'Surgical site infections in infants admitted to the neonatal intensive care unit', *Journal of Pediatric Surgery,* 49(3), pp. 381-384.