

ANALYSING THE FACTORS INFLUENCING ON TYPE OF PREGNANT MOTHERS’ DELIVERY (NORMAL AND CESAREAN): A CASE STUDY GENERAL HOSPITAL AMPARA

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Abstract

The purpose of this study is to analyze the factors influencing the type of pregnant mothers’ delivery (normal and cesarean) at General Hospital Ampara. The objective of this research study is to compare the types of delivery such as vaginal and cesarean delivery with demographic factors ethnicity and age of mothers. Furthermore, types of delivery were analyze with infant factors: Weight, Head Circumference, Height, Shoulder and Gender. For the purpose of the research study data were acquired from general hospital, Ampara, pregnant women aged from 17years to 48years, who were had given birth within 1st August 2015 to 31st December 2015 and the total number of 1400 data were acquired. Descriptive statistics, two samples t-test, one way ANOVA, mean comparison test and correlation analysis were used to analyze the data. It was found that significant different of infants’ weight between vaginal and cesarean delivery at theage of mothers’ year 23, 29 and 32 respectively. Also, it was found that significant different of infants’ head circumference between vaginal and cesarean delivery only at the age of mothers’ 29. Further, it was found that significant different of infants’ height between vaginal and cesarean delivery at the age of mothers’ years 23,27,28,29,31,32,34 and 35 respectively. And it was found that significant different of infants’ shoulder between vaginal and cesarean delivery atthe age of mothers’ years 24, 26, 29 and 32 respectively.

Key words: Vaginal Delivery, Cesarean Delivery, General Hospital Ampara, ANOVA.

Introduction

Pregnancy is the most wonderful physiological phenomenon which is responsible for the existence of mankind within the universe, though it creates a high risk environment for a woman’s life. With development of the discipline of obstetrics and the health systems, the threat to life has been minimized and the world has achieved a lot in maternal and child health. Therefore, identification of the factors influencing the type of pregnant mothers’ delivery is important to reduce this risk for both maternal and infant life.

Sri Lanka, although a developing country, has been able to achieve remarkable health indices such as low maternal mortality rate, infant mortality rate, under five mortality rate, higher level of life expectancy due to the tireless efforts of many stakeholders over the last few decades. Also there is great concern regarding the rising cesarean section rates in Sri Lanka. The cesarean rates reported in Sri Lanka have increased from approximately 8.4% in 1988 to 13.3% in 1998 and 30.6% in 2007. The recovery process too from normal labour can be faster than that of caesarean section. A caesarean is a serious surgery and is not a simple process. The mother is given local anesthesia to suppress pain.

Vaginal delivery

A vaginal delivery is the birth of offspring (babies in humans) in mammals through the vagina. It is the natural method of birth for all mammals except monotremes, which lay eggs into the external environment. The average length of a hospital stay for a normal vaginal delivery is 36-48 hours or with an episiotomy 48-60 hours, whereas a C-section is 72-108 hours. The process time can vary between each mother and each delivery.

Caesarean section

There are situations where the safest option for mother or baby is to have a caesarean section. As a caesarean section involves major surgery, it will only be performed where there is a real clinical need for this type of delivery. Baby is delivered by cutting through mother's abdomen and then into mother's uterus. The cut is made across mother's abdomen, just below mother's bikini line. The scar is usually hidden in mother's pubic hair. It takes about 5-10 minutes to deliver the baby and the whole operation takes about 40-50 minutes.

Many researchers have been carried out on the topic of analyzing the factors influencing the type of pregnant mothers' delivery (normal and cesarean).

Yilmazet. al., (2013) attempted to find women's preferences of method of delivery and influencing factors. This study have taken into account intrinsic and extrinsic factors to find out the factors of influencing with type of delivery (virginal and cesareans) and to see the effect of factors age, educational status, occupational status, level of income, type of health professional following-up during pregnancy, number of births, pregnancy following infertility treatment, being informed about vaginal delivery, being informed about cesarean deliver and type of the last delivery.

Loke et. al., (2015) carried out the mode of delivery among the Hong Kong Chinese women aged 18-45, who were pregnant or had given birth within the last three years.

Zakerihamidiet.al., (2014) analyzed vaginal delivery vs cesarean delivery. A focused ethnographic study of women's perceptions in the north of Iran. Data were collected through in-depth interviews and participant observation.

Liu et.al., (2013) examined the preferences for mode of delivery in nulliparous argentinean women in Buenos Aires, Argentina. The sample included 29 nulliparous pregnant women aged 18-35 years old. The results indicated that most of the women preferred vaginal delivery (VD) due to cultural, personal, and social factors. VD was viewed as normal, healthy, and a natural rite of passage from womanhood to motherhood. Pain associated with vaginal delivery was viewed positively.

General hospital, Ampara

This research was based on Ampara general hospital labor room. Ampara hospital is a government hospital in Ampara, Sri Lanka. It is controlled by the central government in Colombo. It is located at Ampara district, Eastern Province in Sri Lanka. The speciality of chosen this hospital is that there are crowded.

Because of Sinhala, Tamil and Muslim mothers were there. Within last few years the hospital was presented with a number of awards nationally and internationally due to it well organized health facilities cleanliness and courteous service of the hospital staff.

Variables of the study

The following variables (factors) were identified for mother and infant.

Mother variable (Factors): Ethnicity, Age and Types of Delivery.

Infant’s variables (factors): Gender, Shoulder, Height, Weight and Head Circumference.

Methodology

Sampling method

The data were acquired from pregnant women from the age 17 to 48 years, who had given birth at Ampara General Hospital. The number of 1400 data were acquired from the birth register book in delivery suite at the hospital.

Data analysis

The several statistical methods were used in the data analysis such as descriptive statistics, two sample t-test, One-way ANOVA, mean comparison test and correlation analysis.

Results and Discussions

Descriptive analysis

According to the table-1 below, it can be observed that considerable change in the age years from 20 to 22 years and from 23 to 35 years. It clearly shows that, when the age of mothers increase then the magnitude of the all infants’ factors tend to increase.

Table 1: The descriptive statistical table of infant’s factors

Age of Mother	Mean Values of Infant’s Factors			
	Weight (Kg)	Head Circumference (Cm)	Height (Cm)	Shoulder (Cm)
20	2.7396	32.400	51.200	34.233
21	2.8045	32.217	51.867	34.333
22	2.7295	32.329	50.822	34.575
23	2.8932	33.051	52.000	35.418
24	2.9614	32.932	52.409	34.795
25	2.8602	32.711	51.494	34.976
26	2.9667	32.966	52.701	35.299
27	2.9218	32.897	52.230	35.644
28	2.8592	32.770	51.575	35.230
29	2.9546	33.050	51.772	35.188
30	2.9027	32.837	51.761	35.239
31	2.9142	33.058	51.986	35.609
32	2.9496	32.971	52.072	35.493
33	2.9376	33.030	52.343	35.657
34	2.8815	32.968	51.935	35.258
35	2.9384	33.289	51.500	36.053

The below table-2 shows the variation of variables ethnicity, delivery type and gender of infants.

Table 2: The total count of demographic variables.

Demographic Variables	Group	Total Count
Ethnicity	Sinhalese	1043
	Muslim	143
	Tamil	35
Gender of Infant	Male	618
	Female	603
Delivery type	Vaginal	815
	Cesarean	406

Two samples t-test

The purpose of conducting independent two samples t-test isto identify whether there was meaning full significant difference between infants' factors: weight, head, height and shoulder with types of delivery normal andcesarean.

At the 5% significance level only the followinginfant factors are significant (see Table-3). This means virginal delivery infant factor and cesarean delivery infant factors are statistically different.

Table 3: Independent two samples t-test results for infant's factors at mother age 20

Mother Age	Significant Infant Factors	Comparison of the Factors
20	None	
21	None	
22	None	
23	Weight Height	Normal Delivery > Cesarean Delivery Normal Delivery > Cesarean Delivery
24	Shoulder	Normal Delivery < Cesarean Delivery
25	None	
26	Shoulder	Normal Delivery > Cesarean Delivery
27	Height	Normal Delivery > Cesarean Delivery
28	Height	Normal Delivery > Cesarean Delivery
29	Weight Height Head Shoulder	Normal Delivery > Cesarean Delivery Normal Delivery > Cesarean Delivery Normal Delivery > Cesarean Delivery Normal Delivery > Cesarean Delivery
30	None	
31	Height	Normal Delivery > Cesarean Delivery
32	Weight Height Shoulder	Normal Delivery > Cesarean Delivery Normal Delivery > Cesarean Delivery Normal Delivery > Cesarean Delivery
33	None	
34	Height	Normal Delivery > Cesarean Delivery
35	Height	Normal Delivery > Cesarean Delivery

The one-way ANOVA test

The One-way ANOVA test can be tested to find there is any significant different of infant's factors due to from different age levels of mothers.The age of mothers were grouped in to three different levels. Level 1 = Age from 20 to 25, Level 2 = Age from 26 to 30 and Level 3 = Age from 31 to 35. The ANOVA test was carried out separately for

both normal and cesarean delivery respectively. The ANOVA test results for normal delivery are shown in table-5 and cesarean delivery test results are shown in table-6.

Table 5: One-way ANOVA analysis for normal delivery at the above age levels

ANOVA Table-Normal Delivery					
Infant Factors	Source of Variation	Df	Mean Square	F	P Value
Weight	Between (Age levels)	2	1.483	7.53	0.01
	Within (Age levels)	812	0.197		
	Total	814			
Head	Between (Age levels)	2	15.46	5.46	0.004
	Within (Age levels)	812	2.83		
	Total	814			
Height	Between (Age levels)	2	64.13	8.69	0.000
	Within (Age levels)	812	7.38		
	Total	814			
Shoulder	Between (Age levels)	2	66.79	7.33	0.001
	Within (Age levels)	812	9.12		
	Total	814			

The above table-5 shows that the probability values are less than 0.05 for all infant factors. So, it can be confirmed that infant factors are significantly different for mothers' different age levels for normal delivery.

In this situation mean separation analysis is carried out to identify the differences. The mean separation analysis results are:

Infant factor weight: Age level-2 & level-3 infant weight are same, whereas level-1 & level-2 and level-1 & level-3 are different. Furthermore, average weight of level-3 > level-2 > level-1.

Infant factor height: Age level-2 & level-3 infant height are same, whereas level-1 & level-2 and level-1 & level-3 are different. Furthermore, average height of level-3 > level-2 > level-1.

Infant factor head parameter: Age level-1 & level-2 and Age level-2 & level-3 infant head parameter are same, whereas level-1 & level-3 is different. Furthermore, average head parameter of level-3 > level-2 > level-1.

Infant factor shoulder: Age level-2 & level-3 infant shoulder are same, whereas level-1 & level-2 and level-1 & level-3 are different. Furthermore, average shoulder of level-3 > level-2 > level-1.

Table 6: The ANOVA table for mothers' age level and types of delivery (Cesarean Delivery)

ANOVA Table-Cesarean Delivery					
Infant Factors	Source of Variation	Df	Mean Square	F	P-Value
Weight	Between (Age levels)	2	0.085	0.38	0.687
	Within (Age levels)	403	0.226		
	Total	405			
Head	Between (Age levels)	2	1.27	0.42	0.656
	Within (Age levels)	403	3.00		
	Total	405			
Height	Between (Age levels)	2	1.51	0.16	0.848
	Within (Age levels)	403	9.14		
	Total	405			
Shoulder	Between (Age levels)	2	12.96	1.45	0.237
	Within (Age levels)	403	8.96		
	Total	405			

From the above table – 6 all P-values are greater than 0.05, this means at 5% level of significance, it can be concluded that there is no significantly difference of mothers' age group for infant factors: weight, Head Circumference, Height, Shoulder.

Correlation analysis for infant factors

Correlation between male infant factors for normal cesarean is given in table-5.

Table 7: Correlation between male infants' factors in normal delivery

	Weight	Head	Height	Shoulder
Weight	1.0000	0.6034	0.7971	0.4342
P-value	0.000	0.000	0.000	0.002
Head	0.6034	1.0000	0.4386	0.5180
P-value	0.000	0.000	0.001	0.000
Height	0.7971	0.4386	1.0000	0.3136
P-value	0.000	0.001	0.000	0.027
Shoulder	0.4342	0.5180	0.3136	1.0000
P-value	0.002	0.000	0.027	0.000

According to the table-7, all P-values < 0.05 and all correlation values are positive values. These results clearly indicates that there is a positive correlation between male infant factors in normal cesarean delivery.

Correlation between female infant factors when the normal delivery is given in table-8. This table also clearly shows that all P-values < 0.05 and all correlation values are positive values. These results clearly indicates that there is a positive correlation between female infant factors in normal cesarean delivery.

Table 8: Correlation among female infants’ factors in normal delivery

	Weight	Head	Height	Shoulder
Weight	1.0000	0.6351	0.6427	0.5790
P-value	0.000	0.000	0.000	0.000
Head	0.6351	1.0000	0.3475	0.3926
P-value	0.000	0.000	0.013	0.005
Height	0.6427	0.3475	1.0000	0.4141
P-value	0.000	0.013	0.000	0.003
Shoulder	0.5790	0.3926	0.4141	1.0000
P-value	0.000	0.005	0.003	0.000

Correlation between male infant factors (see table-9) and female infant factors (see table -10) when the cesarean delivery are given. These tables also clearly show that all P-values < 0.05 and all correlation values are positive values. These results clearly indicates that there is a positive correlation between female infant factors in normal cesarean delivery.

Table 9: Correlation among male infants’ factors in cesarean delivery.

	Weight	Head	height	Shoulder
Weight	1.0000	0.7684	0.7381	0.6480
P-value	0.000	0.000	0.000	0.000
Head	0.7684	1.0000	0.5049	0.5887
P-value	0.000	0.000	0.000	0.000
Height	0.7381	0.5049	1.0000	0.4746
P-value	0.000	0.000	0.000	0.000
shoulder	0.6480	0.5887	0.4746	1.0000
P-value	0.000	0.000	0.000	0.000

Table 10: Correlation among female infants’ factors in cesarean delivery.

	Weight	Head	height	Shoulder
Weight	1.0000	0.7056	0.7372	0.8598
P-value	0.000	0.000	0.000	0.000
Head	0.7056	1.0000	0.4874	0.5737
P-value	0.000	0.000	0.000	0.000
Height	0.7372	0.4874	1.0000	0.7249
P-value	0.000	0.000	0.000	0.000
Shoulder	0.8598	0.5737	0.7249	1.0000
P-value	0.000	0.000	0.000	0.000

Conclusion

Most of the pregnant mothers in Ampara base hospital were Sinhalese, within the age limit of 20-35 and the delivery type was normal delivery and equal number of male and female infants were delivered. All factors of infants are trend to increase with the increasing the age of mothers. There were significant difference of infants' weight among virginal and cesarean delivery at age of mothers' 23, 29 and 32. There were statistical difference of infants' head circumference between virginal and cesarean delivery only at age of mother 29. There were significant difference of infants' height among virginal and cesarean delivery at age of mothers' 23, 27, 28, 29, 31, 32, 34 and 35. Furthermore, there were significant different of infants' shoulder between vaginal delivery and cesarean delivery at age of mother 24, 26, 29 and 32.

Age of mothers' have significant impact on the infant factors weight, head, height and shoulder only in virginal delivery. At the age level 20-25 has significantly less infants factors than other two levels age level 26-30 and 31-35. But, there were no any significant difference of age of mothers for the infants factors for cesarean delivery. There was positive correlation between infant factors: weight, head, height and shoulder for male and female infants in both virginal and cesarean delivery.

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