Analysis Report

This report is structured as follows.

Contents

Frequency Analysis

The table below shows the frequency (count and percentage) of individuals on all variables of the dataset.

Category	Level	Count	Percentage (%)
Group	Group1(scar site pregnancy)	25	50
	termm pregnancy	25	50
Maternal Age	35 and above	29	58
	Below 35	21	42
Gravidity	3 and Below	4	8
	4-5	15	30
	Above 5	31	62
Parity	3 and below	19	38
	4	2	4
	4-5	14	28
	Above 5	15	30
Abortions	1-2	26	52
	3 and above	3	6
	None	21	42
Interval between current pregnancy and last pregnancy	2-5 years	30	60
	less than 1 year	17	34
	more than 5 years	3	6
Indication of last LSCS	anyother	1	2
	Failed progress	7	14
	Fetal distress	3	6
	Previous 2	10	20
	previous 3	13	26
	previous 4	10	20
	Previous 5	6	12
Used IUCD after last birth	No	40	80
	yes	10	20
H_O PID	no	38	76
	yes	12	24
H_O UTI since last birth	no	47	94
	yes	3	6
current pregnancy by ART	no	45	90
	yes	5	10
Treatment options for scar site pregnancy	Comined 1 and 4I/M methotrexateand aspiration	12	48
	I/M methotrexate	5	20
	KCL intrauterine	1	4
	No treatment	1	4
	transvaginal aspiration	6	24
Clinical presentation	asymptomatic	3	6
	both2 and 3	15	30
	Pain abdomen	16	32
	referred after failed tm from hospital	1	2
	vaginal bleeding	15	30
Level of BHCG AT DIAGNOSIS	5000-10000	13	52
	above 10,000	9	36
	Below 5000	3	12
lEVEL OF BHCG 1 week after tm	Above 500	1	4
	Below 100	15	60
	Below200	6	24
	Below500	3	12

The table below further disaggregates the frequencies into the two groups of interest to the research: scar site pregnancy and term pregnancy.

Variable	Level	Group1(scar site pregnancy)		termm pregnancy	
		N	(%)	N	(%)
Abortions	1-2	14	28	12	24
	3 and above	3	6	0	0
	None	8	16	13	26
Clinical presentation	asymptomatic	1	2	2	4
	both2 and 3	9	18	6	12
	Pain abdomen	9	18	7	14
	referred after failed tm from hospital	1	2	0	0
	vaginal bleeding	5	10	10	20
current pregnancy by ART	no	20	40	25	50
	yes	5	10	0	0
Gravidity	3 and Below	1	2	3	6
	4-5	8	16	7	14
	Above 5	16	32	15	30
H_O PID	no	17	34	21	42
	yes	8	16	4	8
H_O UTI since last birth	no	22	44	25	50
	yes	3	6	0	0
Indication of last LSCS	anyother	0	0	1	2
	Failed progress	4	8	3	6
	Fetal distress	1	2	2	4
	Previous 2	5	10	5	10
	previous 3	6	12	7	14
	previous 4	4	8	6	12
	Previous 5	5	10	1	2
Interval between current pregnancy and last pregnancy	less than 1 year	10	20	7	14
	2-5 years	14	28	16	32
	more than 5 years	1	2	2	4
lEVEL OF BHCG 1 week after tm	Below 100	15	60	0	0
	Below200	6	24	0	0
	Below500	3	12	0	0
	Above 500	1	4	0	0
Level of BHCG AT DIAGNOSIS	5000-10000	13	52	0	0
	above 10,000	9	36	0	0
	Below 5000	3	12	0	0
Maternal Age	35 and above	15	30	14	28
	Below 35	10	20	11	22
Parity	3 and below	8	16	11	22
	4	2	4	0	0
	4-5	6	12	8	16
	Above 5	9	18	6	12
Treatment options for scar site pregnancy	Comined 1 and 4I/M methotrexateand aspiration	12	48	0	0
	I/M methotrexate	5	20	0	0
	KCL intrauterine	1	4	0	0
	No treatment	1	4	0	0
	transvaginal aspiration	6	24	0	0
Used IUCD after last birth	No	17	34	23	46
	yes	8	16	2	4

Certain categories with less than 5 patients were merged with other categories to ensure a more robust statistical analysis. This merging is especially relevant in small datasets, where having too many categories with a low number of observations can lead to statistical issues, such as insufficient power to detect significant differences or associations. The following transformations were performed:

Gravidity: The levels "3 and Below" and "4-5" were merged into a single category "5 and Below". This was done to avoid having a very small number of cases in individual categories, which might not provide reliable statistical insights.

Parity: The level "4" was merged with "4-5". This consolidation increases the robustness of the analysis by reducing the fragmentation of the data into too many small groups.

Abortions: Both "1-2" and "3 and above" levels were combined into a single category "Yes". This approach simplifies the analysis by focusing on the presence of abortions regardless of the count, thereby avoiding small and potentially unstable subgroups.

Interval between Current Pregnancy and Last Pregnancy: The levels "more than 5 years" and "2-5 years" were merged into "2 or more years". This adjustment is likely made to create a more balanced distribution across categories, especially if the "more than 5 years" group had very few observations.

Indication of Last LSCS: The levels "anyother" and "Fetal distress" were merged into "Any Other". This is a pragmatic approach to deal with sparse data in these categories.

Clinical Presentation: The categories "referred after failed tm from hospital" and "asymptomatic" were combined into "Assymptomatic or referred after failed tm". This grouping likely reflects a clinical decision to consider these conditions together for the purpose of analysis.

The following sections present the results of statistical analyses conducted with this new grouping scheme.

Chi-Square Analysis

The table below presents the results of a Chi-Square analysis, which compares the distributions of various categorical variables between two groups: Group1 (scar site pregnancy) and term pregnancy. The Chi-Square test is used to determine whether there is a significant association between each categorical variable and the group classification. The test compares the observed frequencies of each level of the categorical variables in the two groups against the expected frequencies if there were no association (i.e., if the distribution was the same across both groups).

Variable	Level	Group1 (scar site pregnancy)	termm pregnancy	X^2	p
Maternal Age	35 and above	60	56	0.000	1.000
	Below 35	40	44		
Gravidity	3 and Below	4	12	1.099	0.577
	4-5	32	28		
	Above 5	64	60		
Parity	3 and below	32	44	3.359	0.339
	4	8	0		
	4-5	24	32		
	Above 5	36	24		
Abortions	1-2	56	48	4.344	0.114
	3 and above	12	0		
	None	32	52		
Interval between current pregnancy and last pregnancy	2-5 years	56	64	0.996	0.608
	less than 1 year	40	28		
	more than 5 years	4	8		
Indication of last LSCS	anyother	0	4	4.620	0.593
	Failed progress	16	12		
	Fetal distress	4	8		
	Previous 2	20	20		
	previous 3	24	28		
	previous 4	16	24		
	Previous 5	20	4		
Used IUCD after last birth	No	68	92	3.125	0.077
	yes	32	8		
H_O PID	no	68	84	0.987	0.321
	yes	32	16		
H_O UTI since last birth	no	88	100	1.418	0.234
	yes	12	0		
current pregnancy by ART	no	80	100	3.556	0.059
	yes	20	0		
Treatment options for scar site pregnancy	Comined 1 and 4I/M methotrexateand aspiration	48			
	I/M methotrexate	20			
	KCL intrauterine	4			
	No treatment	4			
	transvaginal aspiration	24			
Clinical presentation	asymptomatic	4	8	3.850	0.427
	both2 and 3	36	24		

Variable	Level	Group1 (scar site pregnancy)	termm pregnancy	X^2	p
	Pain abdomen	36	28		
	referred after failed tm from hospital	4	0		
	vaginal bleeding	20	40		
Level of BHCG AT DIAGNOSIS	5000-10000	52			
	above 10,000	36			
	Below 5000	12			
lEVEL OF BHCG 1 week after tm	Above 500	4			
	Below 100	60			
	Below200	24			
	Below500	12			

In summary, the Chi-Square analysis indicates that there were no statistically significant differences between Group1 (scar site pregnancy) and term pregnancy groups across the analyzed variables. This suggests that the distributions of these variables are similar in both groups. The variables with blank chi-squares are variables that were only measured for the scar site pregnancy group, thus making the performance of the test impossible.

Probit Models

A probit model is a type of regression where the dependent variable is a binary outcome. It is similar to logistic regression but uses the probit link function, which is based on the cumulative distribution function of the standard normal distribution. In this model, the probability of the outcome occurring is related to the predictors through the probit function. Probit models are often used when the focus is on the influence of several independent variables on a dichotomous outcome.

In the probit regression analysis, the model demonstrated a significant fit to the data, $\chi^2(8) = 24.32$, $p = .002$, indicating a notable improvement over the null model. The model's null deviance was 69.32 with 49 degrees of freedom, and the residual deviance was 45.00 with 41 degrees of freedom. The Akaike Information Criterion (AIC) was 62.998. McFadden's Pseudo R-squared value was 0.351, suggesting a moderate explanatory power of the model.

The table below shows the model coefficients.

Index	Coefficients	Odds_Ratios	P
(Intercept)	-1.772	0.170	0.062
Used.IUCD.after.last.birth yes	1.217	3.378	0.047
H_O.PID yes	0.629	1.877	0.268
H_O.UTI.since.last.birth yes	6.870	963.069	0.993
current.pregnancy.by.ART yes	6.557	704.035	0.991
Interval.between.current.pregnancy.and.last.pregnancy less than 1 year	1.341	3.824	0.021
Clinical.presentation both2 and 3	0.705	2.025	0.427
Clinical.presentation Pain abdomen	0.998	2.714	0.327
Clinical.presentation vaginal bleeding	0.393	1.482	0.655

The analysis revealed that the use of Intrauterine Contraceptive Devices (IUCD) after the last birth (Used.IUCD.after.last.birthyes) was significantly associated with belonging to the scar site pregnancy group, $B = 1.217$, $OR = 3.378$, $p = .047$. This finding indicates that using IUCD after the last birth is associated with an increased probability of the outcome occurring. Additionally, the interval of less than one year between the current pregnancy and the last pregnancy (Interval.between.current.pregnancy.and.last. pregnancyless than 1 year) was positively associated with the outcome, $B = 1.341$, $OR = 3.824$, $p = .021$, indicating a significant effect.

The other variables were not significantly associated with scar site pregnancy.

Age as Control Variable

A second model was tested, including maternal age as an additional predictor.

In this probit regression analysis, the model again demonstrated a significant fit to the data, $\chi^2(9) = 25.94$, $p = .002$. The null deviance was 69.32 on 49 degrees of freedom, and the residual deviance was reduced to 43.38 on 40 degrees of freedom, indicating a better fit compared to the previous model. The Akaike Information Criterion (AIC) slightly increased to 63.378, and the McFadden's Pseudo R-squared value improved to 0.374, suggesting enhanced explanatory power with the inclusion of age as a control variable.

Index	Coefficients	Odds_Ratios	P
(Intercept)	-1.874	0.154	0.055
Maternal.Age Below 35	-0.618	0.539	0.217
Used.IUCD.after.last.birth yes	1.373	3.948	0.031
H_O.PID yes	0.660	1.934	0.254
H_O.UTI.since.last.birth yes	7.317	1505.530	0.992
current.pregnancy.by.ART yes	7.184	1318.284	0.989
Interval.between.current.pregnancy.and.last.pregnancy less than 1 year	1.611	5.008	0.013
Clinical.presentation both2 and 3	0.867	2.380	0.342
Clinical.presentation Pain abdomen	1.253	3.503	0.233
Clinical.presentation vaginal bleeding	0.637	1.891	0.488

Analyzing the coefficients, the results did not change much. The use of Intrauterine Contraceptive Devices (IUCD) after the last birth (Used.IUCD.after.last.birthyes) was significantly associated with scar site pregnancy, $B = 1.373$, $OR = 3.948$, $p = .031$. The interval of less than one year between the current pregnancy and the last pregnancy (Interval.between.current.pregnancy.and.last.pregnancy less than 1 year) also showed a strong positive association with the outcome, $B = 1.611$, $OR = 5.008$, $p = .013$.

The coefficient for maternal age below 35 (Maternal.AgeBelow 35) was -0.618, indicating a negative association with the outcome, but this was not statistically significant ($p = .217$).