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A RETROSPECTIVE ANALYSIS OF SSI (SURGICAL SITE INFECTION) ASSOCIATED RISK FACTORS OCCURRING IN PELVIC ORGANS OF PREGNANT WOMEN

Dr. Noreen Javaid, Dr. Zarqa Shahid, Dr. Sobia Ahmad
Nishter Medical University & Hospital, Multan

Abstract:

Background and Objective: *The chances of infection during delivery and labour are more among pregnant women. Most of the infections occur in the pelvic organs when the flora is normal and there is contamination in the uterus and sterile amniotic fluid of female's gastrointestinal tract or genital. This research primarily aims to analyze the surgical infections associated risks in obstetrics. We also intend to evaluate the SSI prevalence and its related risk factors.*

Methodology: *This observational retrospective research held at Services Hospital, Lahore in the timeframe starting from February 2017 to November 2017 on all the females who delivered their babies through normal vaginal delivery or caesarian section (C-Section). This was an observational retrospective facility-based research conducted for a specific purpose to evaluate the surgical infections prevalence and related risk factors among pregnant women who were about to experience any possible surgical intervention. We selected the sample of this research from the hospital's obstetrics ward.*

Results: *Detailed socio-demographic values clearly indicate that these factors are not independent and in the same way the SSI is also not independent. Both SSI and factors depend on the listed socio-demographic values. There is no significant relation of SSI with the listed sociodemographic variables except the factor of age. The risk development was high among females of under 19 years of age. The risk factor was among these females was three times high in these females for infection development at the surgical site than the age bracket of (20 – 30) years.*

Conclusion: *The development of infection on the surgical site is more in the young females especially among those who were under the age of nineteen years than the females of elder age group. Wound healing and surgical intervention duration are not among dependent factors and they also present no relation with SSI.*

Keywords: *Pregnant, Surgical Site Infection (SSI), Women, Sociodemographic, Gastrointestinal and Genital.*

Corresponding author:
Dr. Noreen Javaid,
Nishter Medical University & Hospital, Multan

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INTRODUCTION:

The chances of infection during delivery and labour are more among pregnant women. Most of the infections occur in the pelvic organs when the flora is normal and there is contamination in the uterus and sterile amniotic fluid of female's gastrointestinal tract or genital. Most of the deaths occur in obstetrics due to postpartum haemorrhage and the next most involved factor is infections in obstetrics causing huge numbers of deaths [1].

Infection refers to multiplication and invasion of body tissues and cells microorganisms that is not observable through clinical investigations and may also result in the shape of cellular injury due to toxins, competitive metabolism, antigen-antibody response and intracellular replication [1]. SSI shows up after thirty or ninety days of operation on the presence of metallic embed addition. The onset of infection is an element of sepsis and human life in the present surgical interventions as it is among various critical issues for experts worldwide. SSI attributes in morbidity, mortality and economic burden along with rehospitalization [2].

SSI is the second most repeated non-desirable entanglement faced after cesarean section than UTI (Urinary Tract Infection). Cesarean Section induced SSI has an association with maternal bleakness, prolonged hospitalization and increased procedural expenses [3]. The impact of anti-toxin prophylaxis to reduce infections in the cesarean section and elective CS are now resolved. Various authors recommend the use of anti-infection therapy after the bracing of umbilical rope [4].

Studies also report that maternal morbidity is high among the cesarean section induced infection in comparison to the normal vaginal delivery [5]. The knowledge about the risk factors and disease prevalence will ultimately help to improve surgical techniques in order to reduce SSI which increased the hospitalization and excessive expenses [6]. This research primarily aims to analyze the surgical infections associated risks in obstetrics. We also intend to evaluate the SSI prevalence and its related risk factors.

METHODOLOGY:

This observational retrospective research held at Services Hospital, Lahore in the timeframe starting from February 2017 to November 2017 on all the females who delivered their babies through normal vaginal delivery or caesarian section (C-Section). This was an observational retrospective facility-based research conducted for a specific purpose to evaluate the surgical infections prevalence and related risk factors among pregnant women who were about to experience any possible surgical intervention. We selected the sample of this research from the hospital's obstetrics ward. The researcher analyzed the research outcomes on SPSS software with a significant P-Value of (< 0.05).

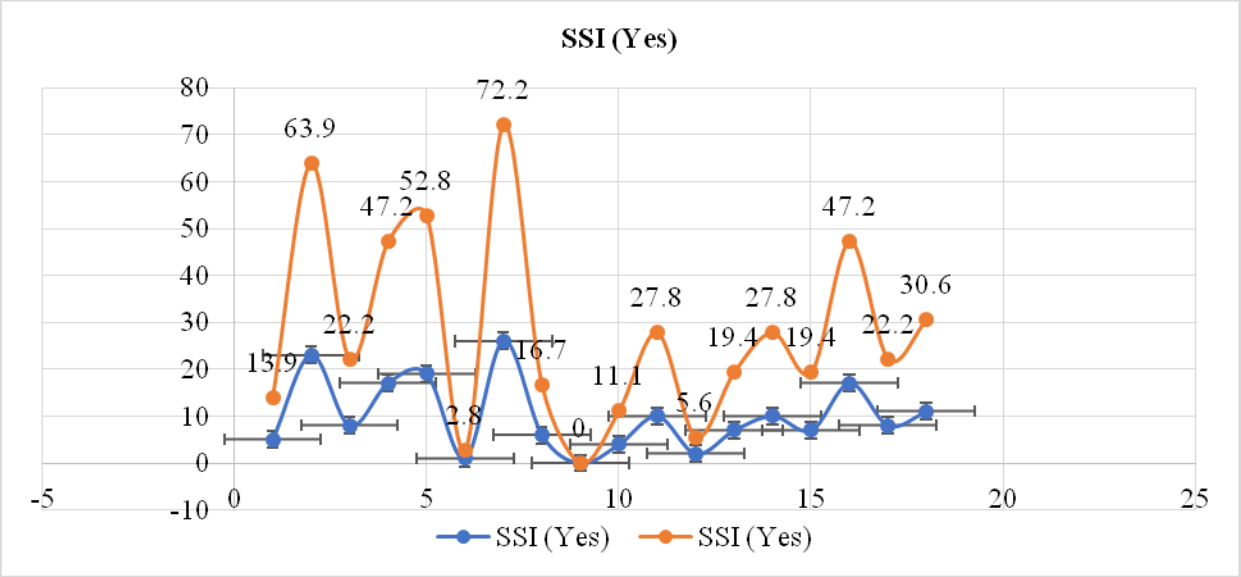
RESULTS:

Detailed socio-demographic values clearly indicate that these factors are not independent and in the same way the SSI is also not independent. Both SSI and factors depend on the listed socio-demographic values. There is no significant relation of SSI with the listed sociodemographic variables except the factor of age. The risk development was high among females of under 19 years of age. The risk factor was among these females was three times high in these females for infection development at the surgical site than the age bracket of (20 – 30) years.

We reported a statically significant relationship between SSI, gestational age and preterm gestational age which was likely to develop SSI four times higher than termed age of gestation. Detailed outcomes are shown in Table – I & II.

Table – I: Socio-demographic features analysis of SSI among the females experiencing obstetrics surgery

Variable		SSI (Yes)		SSI (No)		Crude OR	95% CI
		No	%	No	%		
Age	≤ 19 Years	5	13.9	18	52	3.453	1.18 – 10.00
	20 – 34 Years	23	63.9	286	52.2	1	
	≥ 35 Years	8	22.2	44	12.6	2.26	0.95 – 5.37
Residence	Urban	17	47.2	149	42.8	1	
	Rural	19	52.8	199	57.2	0.837	0.437 – 1.66
	Other	1	2.8	10	2.9	0.979	0.120 – 7.981
Occupation	House Wife	26	72.2	199	57.2	2.047	0.815 – 5.14
	Civil Servant	6	16.7	94	27	1	
	Teacher	0	0	3	0.9	0.000	0.000
	Business lady	4	11.1	52	14.9	1.205	0.325 – 4.465
Education Status	Illiterate	10	27.8	67	19.3	1.727	0.64 – 4.783
	Read and Write only	2	5.6	51	14.7	0.454	0.091 – 2.270
	Grade 1 – 8	7	19.4	61	17.5	1.328	0.442 – 3.985
	Grade 9 – 12	10	27.8	88	25.3	1.315	0.478 – 3.617
	Above Grade 12	7	19.4	81	23.3	1	
Month Income	≤ 1000	17	47.2	158	45.4	0.89	0.400 – 1.983
	1001 – 4000	8	22.2	99	28.4	0.669	0.257 – 1.736
	≥ 4000	11	30.6	91	26.1	1	



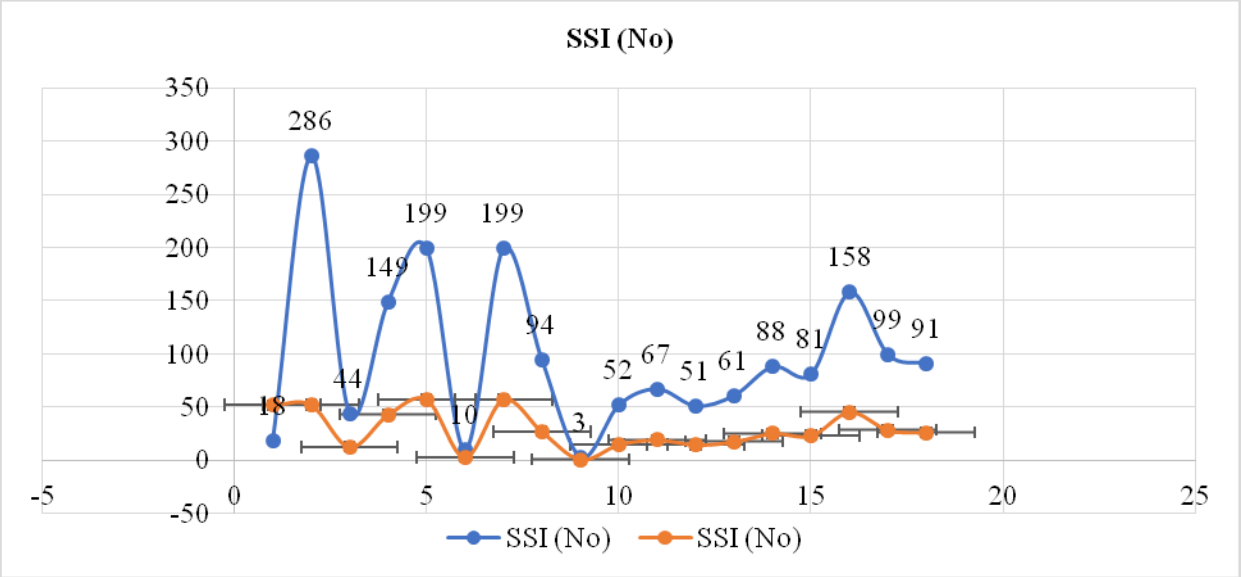
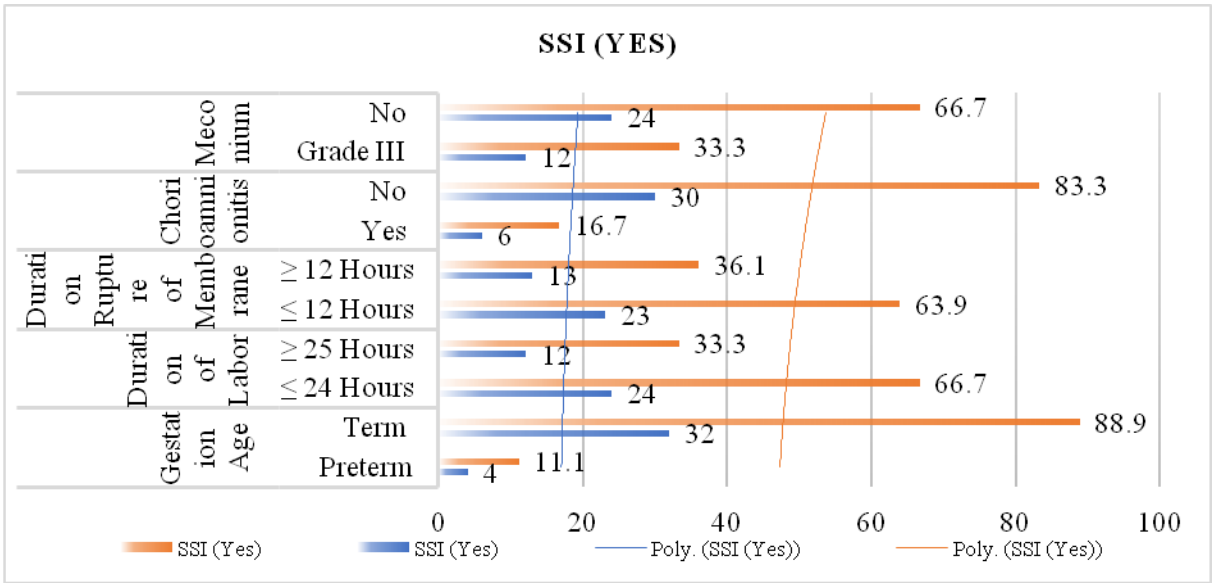
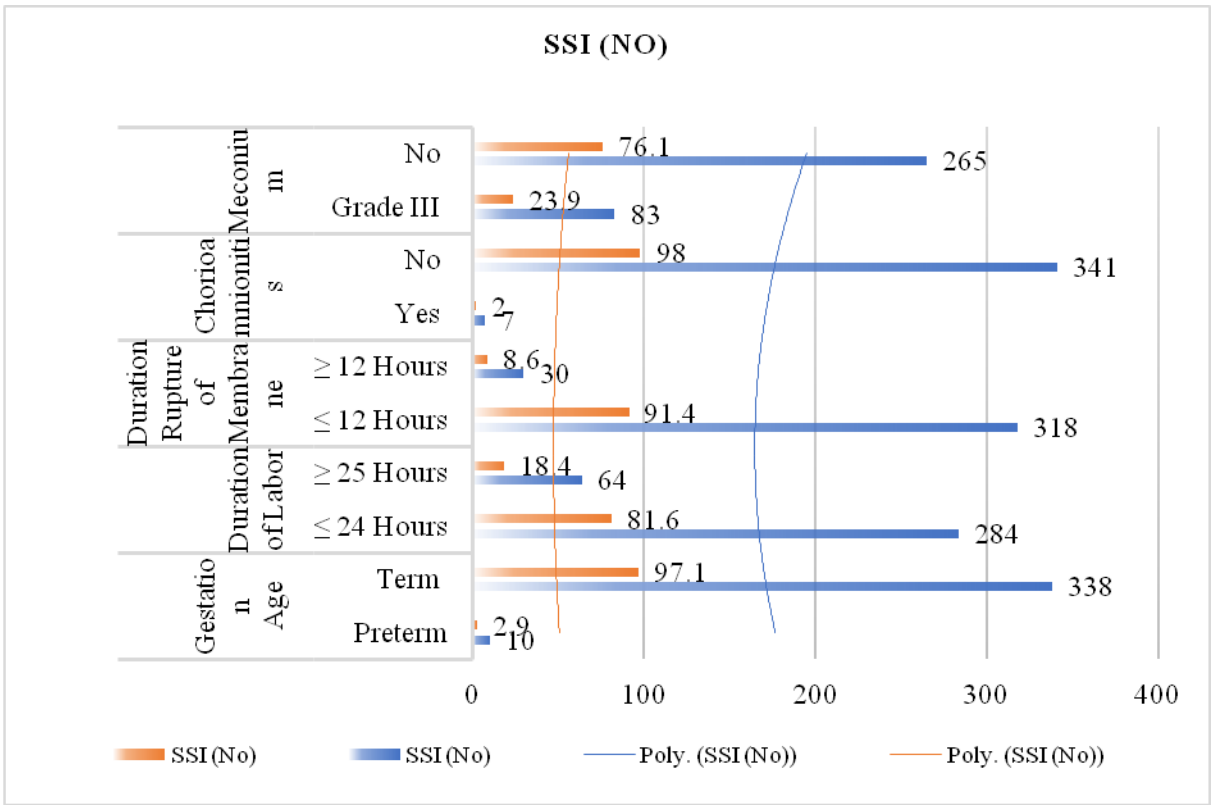


Table – II: Surgical infection and Obstetrics variables association among the females experiencing obstetrics surgery

Variable		SSI (Yes)		SSI (No)		Crude OR	95% CI
		No	%	No	%		
Gestation Age	Preterm	4	11.1	10	2.9	4.225	1.254 – 14.238
	Term	32	88.9	338	97.1	1	
Duration of Labor	≤ 24 Hours	24	66.7	284	81.6	1	
	≥ 25 Hours	12	33.3	64	18.4	2.219	1.054 – 4.670
Duration Rupture of Membrane	≤ 12 Hours	23	63.9	318	91.4	1	
	≥ 12 Hours	13	36.1	30	8.6	5.991	2.757 – 13.022
Chorioamnionitis	Yes	6	16.7	7	2	9.743	3.077 – 30.848
	No	30	83.3	341	98	1	
Meconium	Grade III	12	33.3	83	23.9	1.596	0.765 – 3.33
	No	24	66.7	265	76.1	1	


SSI (YES)
Gestation Age
Term
Preterm
Duration of Labor
≥ 25 Hours
≤ 24 Hours
Duration Rupture of Membrane
≥ 12 Hours
≤ 12 Hours
Chorioamnionitis
No
Yes
Meconium
No
Grade III
66.7
24
33.3
12
83.3
30
16.7
6
36.1
13
63.9
23
33.3
12
66.7
24
88.9
32
11.1
4
0
20
40
60
80
100
SSI (Yes)
SSI (Yes)
Poly. (SSI (Yes))
Poly. (SSI (Yes))


SSI (NO)
Gestation Age
Term
Preterm
Duration of Labor
≥ 25 Hours
≤ 24 Hours
Duration Rupture of Membrane
≥ 12 Hours
≤ 12 Hours
Chorioamnionitis
No
Yes
Meconium
No
Grade III
76.1
265
23.9
83
98
341
2
7
8.6
30
91.4
318
18.4
64
81.6
284
97.1
338
2.9
10
0
100
200
300
400
SSI (No)
SSI (No)
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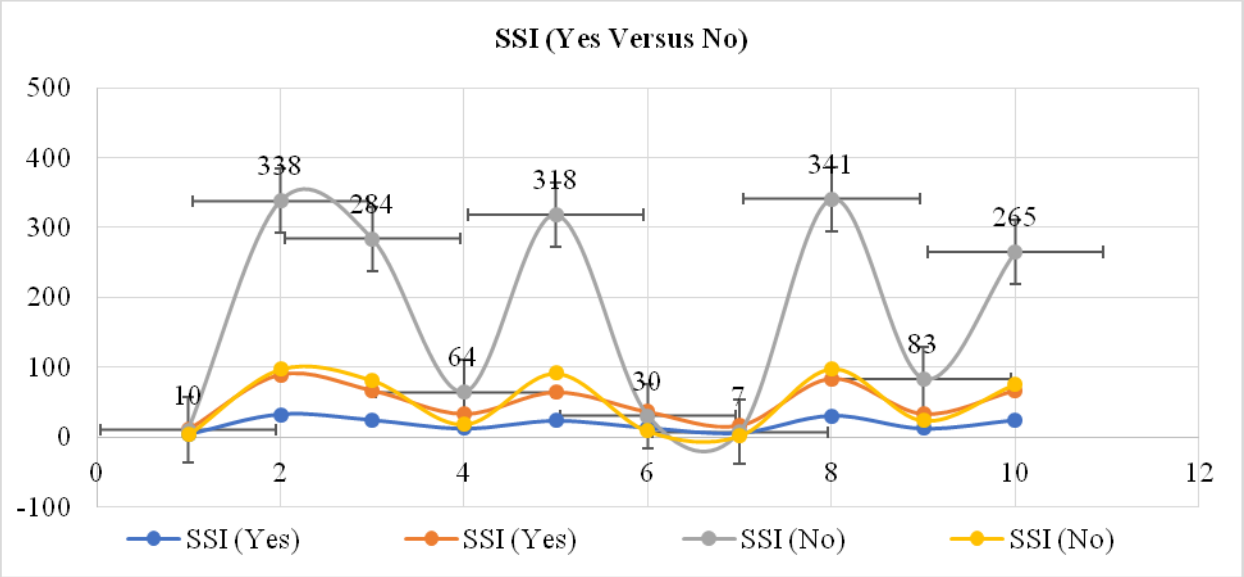

DISCUSSION:

SSIs refers to a burden on the healthcare system with prolonged hospitalization, extra economic burden and extra medical attention. As a result, the techniques and methods with an objective of reducing the onset of SSI will improve healthcare and its effectiveness [7]. Our reported SSI rate was below than the other research studies conducted in Africa; whereas, these outcomes are higher than the research studies held in developed countries [8]. A number of SSI cases were superficial in this series which is the same as reported in various evaluations. Research conducted in the USA reported the onset of SSI as 66% [9]. SSI occurrence in hysterectomy is about 1.7% as reported in the USA. It is also a fact that majority of the SSI cases are not trackable because as they occur outside of clinical setting [10 – 12].

SSI occurrence is more common in the females of young maternal age who experience cesarean section. Whereas, the SSI occurrence is low in the old age females having an age of forty years and above. The possible reason may include the blend of multiple patients of obstetrics and gynaecological surgeries [13]. There was no significant association of age between the females having an onset of SSI following hysterectomy as reported in a research conducted in USA [41].

Unplanned anti-infection prophylaxis is a severe hazard for the surgical site infection. There are also comparable results which are in line with the prophylaxis rules as suggested in the literature [15]. The American Association of Gynecologists and Obstetricians recommends anti-microbial prophylaxis for prompted premature births, hysterectomies, urogynecology procedures and hysterosalpingography [16 – 17].

CONCLUSION:

The development of infection on the surgical site is more in the young females especially among those who were under the age of nineteen years than the females of elder age group. Wound healing and surgical intervention duration are not among dependent factors and they also present no relation with SSI.

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