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# Healthcare Utilization, Induced Labour and Caesarean Section in the Pregnancy after Stillbirth: A Prospective Study

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## ABSTRACT

***Objective:*** To measure the healthcare utilization, induced labour and frequency of C-sections in the pregnancy after stillbirth in the tertiary care setting.

***Study Design:*** Comparative prospective study.

***Place and Duration of Study:*** Pak Emirates Military Hospital, Rawalpindi Pakistan, from Sep 2018-Sep 2019.

***Methodology:*** A total of 181 pregnant women were recruited and divided into two groups; Group-1=75 pregnant women after stillbirth and Group-2=106 pregnant women after live birth. Data regarding the healthcare utilization, induced labour, onset and mode of delivery and caesarean section was collected after the informed consent.

***Results:*** Mean age of the study population (n=181) was 28.73±5.0 years (Range:19-40 years). Group-1 females had more antenatal visits (7.88±3.60) compared to women of Group-2 (6.18±2.90) (p-value=0.001). History of Induced labour and caesarean section were also more in Group-1 (Stillbirth-Group). Pregnant women in Group-1 were found to be significantly more worried about the pregnancy outcome in 53(70.7%) as compared to Group-2 in 5(4.7%) with a *p*-value of <0.001.

***Conclusion:*** Pregnant women after stillbirth were significantly avid users of healthcare services and had more induced labour and caesarean section.

**Keywords:** Caesarean section, Induced labour, Prenatal care, Stillbirth.

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## INTRODUCTION

Stillbirth has a significant impact on females and their families. It was found that at least 2.6 million stillbirths occur beyond 28 weeks annually worldwide.[1] Future reproductive choices, and management decisions made in subsequent pregnancies, are altered after a stillbirth occurs. Care in the subsequent pregnancy varies among providers, and evidence to guide such care is sparse.[2] Screening, monitoring, birth considerations and psychosocial care are necessary for subsequent pregnancies.[3]

After a stillbirth, up to 50 percent of couples begin another pregnancy within a year. Many women feel an increased risk of pregnancy failure and anxiety during pregnancies after a stillbirth.[4]

Antenatal treatment is free and mostly delivered by nurses and general practitioners in western countries.[5] This requires antenatal appointments, including an ultrasound scan before the 32nd gestational week. Additional treatment and access to the appropriate facilities are given where necessary, but there are no formal guidelines on pregnancy for women with prior mortality.[6]

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It is important to differentiate between pregnancies that do not result in an alive child in an attempt to enhance fetal death reporting. Global health estimates have shown that approximately 2.6 million deaths are registered every year, 75% of which occur in low- and medium-income countries.[7] Pakistan was the nation that had the highest rate of mortality worldwide in 2015 (43.1 deaths per 1000 total births compared to the world's 18.4 estimates). It remains an unrecognized problem for many countries, including Pakistan, given the significance of stillbirths.[8]

The lack of adequate gynaecological and obstetrical care, poor maternal health, poor delivery patterns, gestational violence and societal practices are all attributable to high stillbirth rates. Therefore, the risk for fetuses with low or overweight mortality is high.[9] Similarly, delayed healthcare-seeking behaviour in Pakistan may contribute to the high incidence of mortality, particularly in rural areas, because of the lack of accessible and quality care facilities.[10]

It remains unknown that either anxiety or the fear of childbirth accounts for more frequent usage of healthcare facilities in pregnancies after stillbirth. The objective of the present study was to find out the healthcare utilization, induced labour and caesarean section in the pregnancy after a stillbirth and to assess anxiety after stillbirth.

## METHODOLOGY

This was a prospective comparative study conducted at the Gynaecology OPD of Pak Emirates Military Hospital, Rawalpindi Pakistan, from September 2018 to September 2019. Ethical permission was sought from the IERB committee (IERB no. A/28/Jul 2018), and data was gathered after informed consent. A total of 181 pregnant women were recruited after consecutive sampling and divided into two groups. The sample size was calculated using the WHO calculator using a reference prevalence of 3% (stillbirth from an under-developed country),[11] and a confidence level of 95%.

**Inclusion Criteria:** Pregnant women after a stillbirth were included in the Group-1 while the nulliparous women, women with at least one live birth and no previous stillbirth, women with previous single or twin pregnancies resulting in a live birth were included in the Group-2.

**Exclusion Criteria:** Women with the communication barrier or patients with debilitating illness were excluded from the study.

Stillbirth was established as fetal death>24 completed gestational weeks or birthweight >500gm, in accordance with the 10th revision of the International Statistical Classification of Diseases, World Health Organization and RCOG Green-top guidelines.[12,13]

Data on healthcare utilization, induced labour, onset and mode of delivery and caesarean section was collected. Questions related to demographic factors, reproductive history and maternal health during pregnancy were asked of the study participants. Information regarding healthcare utilization was collected from the study participants. The women were asked how many antenatal visits they had, unscheduled contacts, the number of ultrasound scans and admission to the hospital during the pregnancy.

Spontaneous/induced labour and C-section were considered under the onset of labour. Vaginal birth, spontaneous or instrumental (vacuum-assisted or forceps-assisted) or C-section, elective or emergency were classified under the mode of delivery. Elective C-sections included those planned >8 hours before the delivery, while emergency C-sections included all other C-sections as per RCOG Green-top guidelines.[13]

Statistical Package for Social Sciences (SPSS) version 21.0 was used for the data analysis. Quantitative data were summarized as Mean±SD, and categorical data were analyzed as the number with a percentage. Independent sample t-test and chi-square test were used for the comparisons. The *p*-value of ≤0.05 was set as the cut-off value for significance.

## RESULTS

A total of 181 pregnant women were recruited and divided into two groups; Group-1=75 pregnant after stillbirth and Group-2=106 pregnant after live birth. The mean age of the study population (n=181) was 28.73±5.00 years (Range: 19-40 years). The mean age in Group-1 was 30.03±4.50 years (22-40 years) while the mean age in Group-2 was 27.81±5.10 years ((19-40 years). The mean BMI in Group-1 was higher, 27.08±1.60, compared to Group-2 mean BMI, 26.63±2.00, as shown in Table-I.

**Table-I: Demographic Characteristics of the Study Groups (n=181)**

| Parameters | Group-1, (n=75) (Multigravida with still birth) | Group-2, (n=106) (Primigravida & Multigravida with live birth) | *p*-value |
|---|---|---|---|
| **Age (Mean±SD)** | | | |
| Range | 30.03±4.50 years (22-40 years) | 27.81±5.10 years ((19-40 years) | 0.004 |
| BMI | 27.08±1.60 kg/m2 | 26.63±2.00 kg/m2 | 0.302 |
| **Education** | | | |
| Under matric | 21(28.0%) | 15(14.2%) | |
| Matriculation | 21(28.0%) | 31(29.2%) | |
| Intermediate | 5(6.7%) | 13(12.3%) | 0.003 |
| Bachelors | 2(2.7%) | 20(18.9%) | |
| Masters | 1(1.3%) | 2(1.9%) | |
| **Gestational Period (Mean±SD)** | | | |
| Range | 37.24±2.30 weeks | 38.40±1.90 weeks | 0.001 |

Table-II depicted a comparison of characteristics between the two groups.

Women in Group-1 had more antenatal visits (7.88±3.60) compared to women with a previous live birth (6.18±2.90) with *p*-value of 0.001. In addition, the number of hospital admissions during the duration of pregnancy was more in Group-1 i-e, 2.24±2.40 (Range: 1-15 admissions) compared to Group-2 i-e, 1.29±0.52 (Range: 1-3 admissions).

History of Induced labour and caesarean section, elective and emergency were also more common in Group-1 (Stillbirth Group) Table-III.

In addition, pregnant women in Group-1 were found to be significantly more worried about the pregnancy outcome in 53(70.7%) as compared to Group-2 in 5(4.7%) with *p*-value<0.001 (Figure).

**Table-II: Comparison of Gravidity, Parity and Comorbid of the Study Groups (n=181**

| Parameters | Group-1 (n=75) (Multigravida with still birth) | Group-2(n=106) (Primigravida & Multigravida with live birth) | *p*-value |
|---|---|---|---|
| **Gravidity** | | | |
| G1 | - | - | |
| G2 | 14(18.7%) | 26(24.5%) | |
| G3 | 13(17.3%) | 15(14.2%) | |
| G4 | 14(18.7%) | 12(11.3%) | |
| G5 | 14(18.7%) | 8(7.5%) | 0.116 |
| G6 | 11(14.7%) | 4(3.8%) | |
| G7 | 6(8.0%) | 2(1.9%) | |
| G8 | 2(2.7%) | 2(1.9%) | |
| G10 | 1(1.3%) | - | |
| **Parity** | | | |
| P1 | 18(24.0%) | 29(27.4%) | |
| P2 | 17(22.7%) | 16(15.1%) | |
| P3 | 20(26.7%) | 14(13.2%) | 0.007 |
| P4 | 13(17.3%) | 4(3.8%) | |
| P5 | 6(8.0%) | 1(0.9%) | |
| P6 | 1(1.3%) | 4(3.8%) | |
| **Alive Issue** | | | |
| L0 | 22(29.3%) | 4(3.8%) | |
| L1 | 25(33.3%) | 30(28.3%) | |
| L2 | 18(24.0%) | 16(15.1%) | |
| L3 | 8(10.7%) | 12(11.3%) | 0.012 |
| L4 | 1(1.3%) | 4(3.8%) | |
| L5 | 1(1.3%) | 1(0.9%) | |
| L6 | - | 1(0.9%) | |
| Previous C-section | 30(40.0%) | 26(24.5%) | 1.000 |
| History of Still Birth | 75(100.0%) | - | - |
| Primigravida | - | 29(27.4%) | - |
| Hypertension | 11(14.7%) | 6(5.7%) | 0.040 |
| Gestational D/MD | 2(2.7%) | 4(3.8%) | 0.681 |

**Table-III: Comparison of Health Care Utilization and Mode of Delivery in the Study Groups (n=181)**

| Parameters | Group-1 (n=75) (Multigravida with still birth) | Group-2(n=106) (Primigravida & Multigravida with live birth) | *p*-value |
|---|---|---|---|
| **No. of Hospital Visits (Mean±SD)** | | | |
| Range | 7.88±3.6 (1-20 visits) | 6.18±2.9 (1-13 visits) | 0.001 |
| **No. of Hospital Admissions** | | | |
| Range | 2.24±2.4 (1-15 admissions) | 1.29±0.52 (1-3 admissions) | 0.007 |
| **USG Scan** | | | |
| Range | 2.33±1.3 (1-5 scans) | 1.57±1.0 (1-4 scans) | <0.001 |
| **Onset of Delivery** | | | |
| Spontaneous | 8(10.7%) | 57(53.8%) | <0.001 |
| Induced | 22(29.3%) | 19(17.9%) | |
| **Mode of Delivery** | | | |
| Vaginal | 20(26.7%) | 45(42.5%) | 0.260 |
| Spontaneous | 2(2.7%) | 11(10.4%) | |
| Total C-section | 48(60.0%) | 26(24.5%) | |
| Elective c-section | 33(44.0%) | 15(14.2%) | 0.341 |
| Emergencyc-section | 15(20.0%) | 11(10.4%) | |
| Worried about the pregnancy outcome | 53(70.7%) | 5(4.7%) | <0.001 |

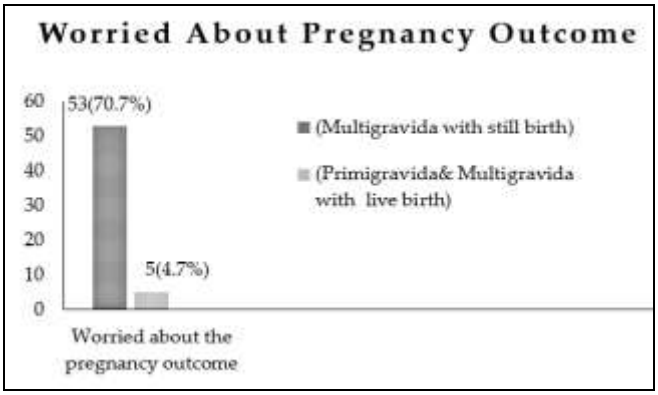


**Figure: Comparison of Worrying About the Pregnancy Outcome in the Study Groups**

## DISCUSSION

Our research study found that pregnant women with a previous stillbirth exhibit more healthcare utilization and had frequent induced labour or C-section in their subsequent pregnancy compared to the women with previous live births and nulliparous women. In addition, women with a previous stillbirth were found to be more worried about the pregnancy outcome and paid more antenatal visits than those with a previous live birth.

Our results showed that anxiety/being worrying results in higher healthcare utilization in women pregnant after stillbirth. In a recent international study by Wojcieszek *et al.*[6] on pregnant women after still-birth, most had additional visits and ultrasound scans. In another study by Hutti *et al*. which included 36 women pregnant after pregnancy loss, increased healthcare utilization was found to be associated with maternal intrusion symptoms, and state anxiety 4 and these findings are consistent with our study results.

In our study, Group-1, women had more antenatal visits (7.88±3.6) than women with a previous live birth (6.18±2.9) with *p*-value=0.001. The number of hospital admissions during the duration of pregnancy was more in Group-1 i-e, 2.24±2.4 (Range: 1-15 admissions) compared to Group-2 i-e, 1.29±0.52( Range: 1-3 admissions). History of Induced labour and caesarean section (elective/emergency) were also more prevalent in Group-1 (Stillbirth Group). Pregnant women in Group-1 were found to be significantly more worried about the pregnancy outcome in 53(70.7%) as compared to Group-2 in 5(4.7%) with *p* value<0.001.

All over the world, the increased rate of C-sections and interventions can be due to maternal medical factors or obstetrical complications.[7,14] Fuglenes et al. and Wax *et al.* demonstrated in their

work that the increased rate of C-sections is the consequence of maternal requests due to the to fear of stillbirth.[7,15] Studies by Saisto *et al*. and Rouhe *et al.* have shown that women with previous miscarriages and delivery experiences show fear of childbirth,[16,17] in accordance with our study findings.

Robson *et al.* in Australia worked on three 100 and 16 subsequent deliveries after unexplained stillbirths, which demonstrated an increased number of preterm births, induced labour, forceps delivery and C-section (elective and emergency).[18] Studies by Heinonen *et al.* in Finland,[19] and Black *et al.* from Scotland,[20] reported similar findings.

According to Robson *et al*. the pregnancy after an unexplained stillbirth and the tendency for early delivery, particularly by C-section, can be the consequence of complications in the pregnancy.[18]

Healthcare utilization with pregnancy loss has been investigated in many international studies. To our knowledge, this was the first local study to assess healthcare utilization. Some local qualitative studies have been done on stillbirths and their causes.[9] Further population-based studies are required to add evidence to the local literature.

## CONCLUSION

Pregnant women after stillbirth were significantly avid users of healthcare services and had more induced labour and caesarean section than other multi- and nulliparous women, but studies with larger sample sizes are needed.

**Conflict of Interest:** None.

**Author's Contribution**

Following authors have made substantial contributions to the manuscript as under:

UH: Conception, data acquisition, data analysis, drafting the manuscript, approval of the final version to be published.

SB & AC: Study design, critical review, approval of the final version to be published.

SS & UU: Critical review, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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