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A Step Towards Lowering Maternal Mortality: Adoption of Elements of WHO's Safe Childbirth Checklist at A Tertiary Care Hospital of Rawalpindi, Pakistan: A Cross Sectional Survey

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Abstract

Background: Use of the World Health Organization's (WHO) Safe Childbirth Checklist (SCC) has been associated with a significant reduction of maternal mortality.

Method: A descriptive cross-sectional survey conducted at a tertiary care hospital of Rawalpindi in labour room and postnatal ward from February 2018 to July 2018. A sample size of 359 was estimated using WHO sample size calculator and were enrolled using purposive sampling technique. A close ended WHO standardized questionnaire covering the 22 elements of WHO SCC was used. Frequencies and percentages were documented of variables and data was analysed using SPSS version 23.

Results: Mean age of participants was 27 ± 4.25 years. On admission, it was observed that being centre of excellence and referral, there was 100% availability of gloves and supplies to clean hands before and after each vaginal examination. Just before pushing or caesarean, it was found that in 342 (95.3%) patients, assistant was identified to help at time of birth. Immediately after one hour of birth, it was noted that 79 (22%) patients were bleeding abnormally and were immediately addressed. We also found out that only 79 (22%) of the mothers were counselled regarding family planning. Almost half of the participant mothers 182 (50.7%) or their companions were counselled regarding danger signs and to seek care immediately which should have been 100%.

Conclusion: Excellent adoption of some of the element up to 100% was observed while some of the elements of checklist were poorly adopted; noticeable was counselling regarding family planning options immediate postpartum.

Keywords: WHO, Safe Childbirth Checklist, MMR, Pakistan

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Abbreviations:
NICU: Neonatal Intensive Care Unit
SCC: Safe Childbirth Checklist
WHO: World Health Organisation

Introduction:

Maternal mortality shows a wide range globally from 3 to 1360 per 100,000 births, though overall, mortality rates have declined but still neonatal mortality ranges from 0.95 to 40.6 per 1000 live births, and still birth rate

ranges from 1.2 to 56.3 per 1000 births. (1) When compared to high-income countries the magnitude of problem is quite high in low- and middle-income countries. (2) Although, reducing to about half of child's death under 5 years of age in the past two decades, success in reducing new born deaths has been much slower, with approximately 3 million neonates still dying every year. To meet the targets of ten or less neonatal deaths and ten or less stillbirths per 1000 births in every country by 2035 will require accelerated scale-up of the most effective care targeting major causes of new born deaths. (3)

Globally as well as in Pakistan, there has been a significant shift from home-based to facility-based births. Among low- and middle-income countries, due to adherence to standard practices proven to reduce mortality, the decline in mortality rates is much lower than expected. (4) In recent years, research has proven that programmes focusing only on training of birth attendants, and improved supplies are not meaningful in improving patient's outcomes. (7) Conversely, practical interventions such as case sheets, direct in-person support, and checklists dramatically improve clinical practices and outcomes. (8)

World Health Organization (WHO) has formulated the Safe Childbirth Checklist (SCC) which contains 29 items that targets major global causes of maternal and neonatal morbidity and mortality. It claims to resolve the issues of poor quality of care that could be effectively provided using a checklist. (9) The target of these guidelines of SCC is to provide a practical tool to assist birth attendants in planning and practically performing a more comprehensive bundle of essential birth practices. (6,10) SCC provides resolution for major causes of maternal mortality (e.g. post-partum haemorrhage, infection, and obstructed labour and hypertensive disorders) and intra-partum stillbirths (e.g. poor intra-partum care and neonatal deaths e.g. birth asphyxia, infection and complications related to prematurity). (10,11)

Implementation of SCC in different countries has shown that a well implemented SCC improves adherence of facility-based attendants to evidence-based care. (6,9) In a South Asian country, it was observed that 68 (69.4%) out of 98 agreed that WHO SCC stimulates effective communication and teamwork among nurses, midwives and doctors. Mean level of knowledge on WHO SCC was 60.1% among all health workers and attitudes for acceptance of using WHO SCC among health workers were high. (11) After the implementation of SCC the successful delivery of essential practices during each birth event from admission to discharge increased from an average of 10 of 29 practices at baseline (95%CI 9.4, 10.1) to an average of 25 of 29 practices afterwards (95% CI 24.6, 25.3; $p<0.001$) in a sub-district hospital in Karnataka India.(12) Similarly, after the introduction of SCC in a district level secondary care hospital in Bangladesh, significant improvements were noted. On average, around 70% more of these safe childbirth practices were implemented in the follow-up period compared to the baseline (from 11 to 19 out of 27 practices). (13) In the current study we tried to examine the extent of adoption of WHO safe childbirth checklist in a tertiary care hospital and to determine the factors hindering the

adoption of WHO safe childbirth checklist in a tertiary care hospital. The results of this study focus on expanding the emerging body of empirical evidence about SCC-especially with practical application in Pakistan.

Operational Definitions:

Who Safe Childbirth Checklist: It comprises of 4 sections and 22 items covering practices from admission of mother to her discharge from hospital.

Tertiary Care Hospital: A health facility with prenatal ward, labour room, operation theatre, postnatal ward and NICU in same setting.

Methodology:

A Descriptive cross-sectional survey conducted in tertiary care hospital of Rawalpindi in labour room and postnatal ward from February 2018 – July 2018. Using population prevalence of 34% for deliveries conducted in a health facility in Pakistan with 5% margin of error and 95% confidence interval, sample size was calculated to be 359. Purposive Sampling technique was used including pregnant women who were admitted to the hospital, had delivery in the same hospital and stayed there for at least 24 hours after delivery. Women who underwent caesarean section were also included. A close ended WHO Standardized Questionnaire covering the 22 elements of WHO Safe Childbirth Checklist was used. The validated questionnaire consisted of four parts. The first part contained questions pertaining to admission of pregnant women to hospital, second part contained questions pertaining to delivery or caesarean section, third part consisted of checklist pertaining to soon after birth (with in 1 hour) and fourth part contained questions pertaining to conditions before discharge from health facility. For quantitative variables, mean and standard deviation was calculated while frequencies and percentages were calculated for the checklist items being adopted at the hospital. Barriers to lack of counselling regarding family planning services to be offered on discharge. Data was analysed using SPSS version 23.

Results:

A total of 359 births were studied. Mean age of participants was 27 ± 4.25 years. Majority 306 (85.6%) had 3 children while 53 (14.8%) had more than 3 children. Mean number of antenatal check-ups which the participant had was 4 ± 1.7 visits. Rest demographics of the participants are given in table 1.

Table 1: Demographic details of the participants (n = 359)

Variable		Frequency (n)	Percentage (%)
Area of residence	Urban	177	49.3
	Rural	118	32.9
	Semi urban	64	17..8
Literacy	Illiterate	28	7.8
	Primary Education	29	8.1
	Middle Education	33	9.2
	Secondary Education	97	27
	Higher secondary Education	37	10.3
	Graduation	95	26.5
	Masters	40	11.1

On Admission: On admission, there are six elements of WHO Safe Childbirth Checklist which were checked for its extent of adoption. It was found that among all participants 29% of the cases were high risk and being referred to this facility. Immediately on admission, partograph was

started in 86.4% of the cases. Rest of the results are shown in Figure 1. It was observed that being centre of excellence and referral, there was 100% availability of gloves and supplies to clean hands before and after each vaginal examination.

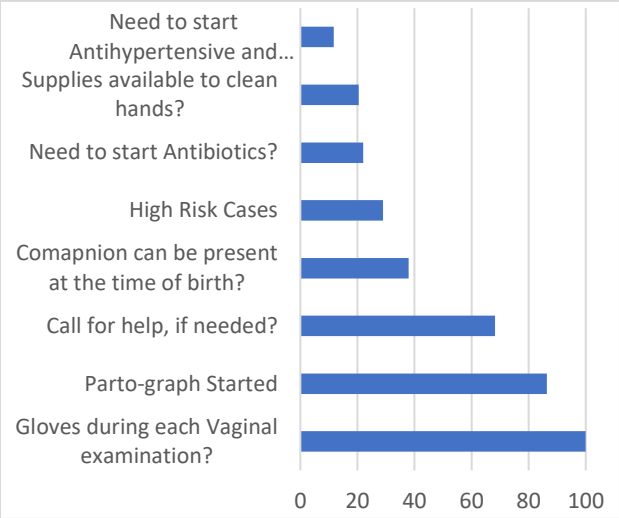

Figure 1: On admission adoption of safe child birth check list

Just Before Normal Delivery or Caesarean Section: Just before pushing or caesarean, 3 items of checklist were assessed. It was found that in 342 (95.3%) participants, assistant was identified to help at time of birth, if needed. Mothers who needed antibiotics were given in 79 (22%) cases while 280 (78%) didn't require it and hence were not given. Antihypertensive and MgSO4 were given in 42 (11.7%) cases with strong indications. Availability of essential supplies was assessed for mother as well as baby. Gloves, alcohol-based hand rub and oxytocin 10 units in a syringe was available in 342 (95.3%), 341 (95%) and 348 (96.9%) of the cases respectively. To resuscitate new-borns, availability of clean towel in 340 (94.7%), cord clamp in 339 (94.4%), sterile blade to cut cord in 346 (96.4%), suction device in 337 (93.9%) and bag and mask in 343 (95.5%) of the cases was observed.

Soon After Birth (Within 1 hour): Immediate one hour after birth is very critical and needs vigilance for mother as well as baby. There are 5 elements in the checklist that were observed closely. It was seen that among all 359 participants of the study only 79 (22%) were bleeding abnormally and were immediately addressed and 280 (78%) were bleeding normally. Within one hour after birth, 214 (59.6%) women were given antibiotics because they started to have chills or foul-smelling discharge. There were only 18 (5%) cases who required antihypertensive and MgSO4.

As far as baby is concerned only 74 (20.6%) required referral to NICU specialized care. Antibiotics were started in 23 (6.4%) new-borns with any of the few indications like respiratory rate >60/min or <30/min, chest in-drawing, grunting, or convulsions, poor movement on stimulation, baby's temperature <35 °C (and not rising after warming) or baby's temperature ≥38 °C. Special care and monitoring was started in 92 (25.6%) new-borns having birth weight less than 2500 grams, needed antibiotics and resuscitation.

Skin to skin contact and breast feeding was started within one hour in only 92 (25.6%) new-borns while 267 (74.4%) of the kids were deprived of it. When explored into causes of delayed initiation, it was found that there was no breast-feeding support group available in hospital. Most mothers couldn't express their breast milk and started bottle feeding immediately.

Majority, 241 (67.1%) of either mothers or companions, were aware of danger signs to call for help if needed.

Just Before Discharge: Just before discharge, 8 elements were observed as part of safety checklist. It was observed that majority 307 (85.5%) of the cases have stay of 24 hours at facility. At the time of discharge only 20 (5.5%) cases needed antibiotics because of fever or foul-smelling discharge and their discharge from hospital was hence delayed. Mothers were also examined for blood pressure and it was observed that 61 (17%) of the cases had high blood pressure and hence treatment started, and discharge delayed. Mothers with abnormal bleeding 38 (10.6%) were also detained. So at the end, a total of 119 (33%) discharges were barred and treatment started for respective reasons.

As far as babies were concerned: only 18 (5%) were to start antibiotics, only 19 (5, 29%) were not feeding well at the time of discharge hence discharge was delayed, and special care given.

After birth, its high time to counsel and sensitize on family planning options for better health of mother and new-born. In our study, we found out that only 79 (22%) of the mothers were counselled regarding family planning. Almost half of the participant mothers 182 (50.7%) or their companions were counselled regarding danger signs and to seek care immediately which should have been 100%. Results are shown in Figure 2.

Discussion:

A study conducted in a tertiary care hospital of Colombo, Sri Lanka reported that the average number of childbirth practices checked in the checklist was 21 out of 29. Average adherence to checklist practices was 71.3% as calculated by using adherence rates to each of the 29 items in SCC. (14) Our study reported that educating mother / companion to seek help (if needed or danger signs appear) during labour, after delivery and after discharge from hospital, seeking help or assistance from other staff during labour, early commencement of breastfeeding, management of maternal HIV and discussing family planning options with the mother were those checked least often. Another study conducted at district level secondary care hospital in Bangladesh observed 310 births. Following the implementation of SCC, the average number of safe childbirth practices increased approximately 70%, from 11 out of 27 practices in baseline to 19 out of 27 practices in end line. (15) However, in contrary to our study, hand hygiene and presence of companion at the time of birth were significantly adopted i.e. 99% and 95.3%

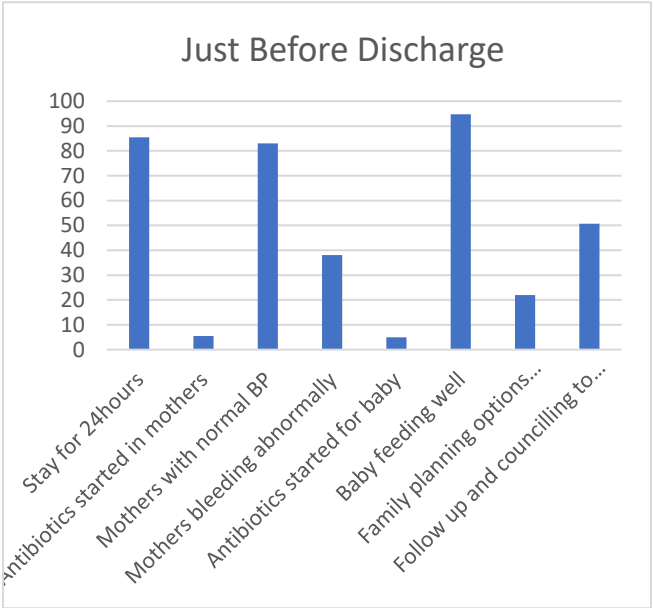

Figure 2: Adoption of checklist before discharge from hospital

respectively. Use of partograph and appropriate eclampsia management were adopted least often with adoption of 0% and 4% respectively in a baseline. However, in our study, use of partograph (85.2%) and eclampsia management / MgSO4 administration (90.6%) were observed most often.

In a prospective, pre-post- intervention study carried out in sub-district level hospital in Karnataka India in 2010, health care workers attending to 499 birth events during baseline period and 795 birth events after the introduction of checklist program were observed. (16) The checklist was observed to be used by the health workers at least 95% of the time at each of the 4 checklists pause points in the post-intervention period with 25 out of 29 practices were adopted. Overall, there was an average 150% increase in adherence to accepted clinical practices at any given birth event, and 28 out of 29 individual practices were delivered with significantly greater frequency. Improvement in hand hygiene of both health workers and mothers, monitoring of mothers and new-borns immediately after delivery, systemization of discharge process, readily availability of medicines and supplies in a labour room were improved after the implementation of checklist. Most importantly communication between nursing staff and teamwork was highlighted. All these aspects were not addressed in our study.

In another study conducted between 2012 and 2015 regarding the implementation of SCC globally in all 6 WHO regions, all teams from 29 countries reported that they had trained end users to use the checklist by 95%. (17) Regarding implementation of SCC, importance of checklist, patient safety, use of checklist and the technical skills around the areas covered by the checklist such as hand hygiene and plotting of partograph were given special attention.

In a study performed in 60 healthcare centres in Utter Pradesh, India in 2017, the adherence to essential practice of SCC in the presence of an intervening coach was 35 out of 39 (>90%) as compared to 7 out of 39 (17%) in the absence of coach. (18) Especially important was that the intervention improved the practices of hand hygiene before vaginal examination by the attendant (from 71% before to 99% after the intervention) and explanation of danger signs to the mother and the companion on admission to hospital was from 45% before to 96% after the intervention. However, in our study, hand hygiene was adopted by 20.5% and counselling of mother or companion to call for help, if needed on admission was 68.2%.

Owing to the success rate of implementation of SCC, if careful strategies are planned then the overall adoption rates for all the items can be improved. The intervention facilities by healthcare personals can significantly improve the adoption rate of SCC as in India, two months coaching among the birth attendants for adopting the SCC practices improved to 72.8% from 41.7% in control group. (19) Due to the simplicity in practicing the SCC, the midwives and nurses are more inclined to adopt the practices while obstetricians/gynaecologists are sometimes less inclined to practice SCC items. The factors which can lead to positive implementation of SCC include the type of SCC item, its manner of implementation and availability of leadership. All the items of

SCC are very easy to be adopted and lead to early detection of the risk factor and timely managements to save life of infant and mother, but the challenges always remain there especially when there is lack of leadership, facilities and at times the checklist itself.

Also lack of motivation in the care givers, lack of understanding of uses of checklist and increased workload remain the predominant resisting factors in most of the cases.

Conclusion:

Excellent adoption of some of the element up to 100% was observed while some of the elements of checklist were poorly adopted. Noticeable was counselling regarding family planning options immediate postpartum. It was practiced among hardly 22% of the cases. As far as initiation of breast feeding is concerned among 25.6% of the cases, it was initiated which is much low as compared to set standards.

Recommendations:

Special education, supervision and training of physicians and attendants about the successful implementation of safe child birth checklist and how it could help to lower maternal and neonatal mortality. Screening of mothers for early detection of high-risk cases is an excellent element to reduce maternal mortality and take immediate steps for high risk cases. To meet the demand of supplies, the authorities should be informed and advised to supply the facilities for smooth running of the hospital. Stay of mother at facility for 24 hours after childbirth with vitals monitoring and the arrangement of follow up after discharge should be done. Family planning services should be offered to all couples postpartum for better utilization of services. Breast feeding counselling groups should be made available in hospital settings to guide mothers in breast feeding and tackle all problems arising during feeding process.

Conflict of Interest:

The authors have no conflict of interest to disclose.

Human and Animal Rights: No rights violated

Statement of Informed Consent: The data was collected after verbal informed consent.

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