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QUALITY OF RECORD KEEPING IN THE INTRAPARTUM PERIOD AT THE PROVINCIAL GENERAL HOSPITAL, KAKAMEGA, KENYA

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## QUALITY OF RECORD KEEPING IN THE INTRAPARTUM PERIOD AT THE PROVINCIAL GENERAL HOSPITAL, KAKAMEGA, KENYA

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### ABSTRACT

**Objective:** To assess the quality of recording critical events in the intrapartum period in Kakamega Provincial General Hospital (PGHK).

**Design:** Retrospective comparative study.

**Setting:** Provincial General Hospital, Kakamega, the referral hospital for Western Province, Kenya.

**Participants:** Two hundred women admitted at the labour ward during the six-month period between 1<sup>st</sup> September 2000 and 28<sup>th</sup> February 2001 were compared to two hundred women admitted between 1st July 2001 and 31st December 2001.

**Intervention:** The Safe Motherhood Demonstration Project (SMDP) was introduced in four districts of Western Province, Kenya, in which PGHK is located. It included on job training in Safe Motherhood which emphasised, among others, collection and utilisation of maternal health care services data.

**Main outcome measures:** Comprehensiveness of recording of biodata, history taking and examination findings were assessed for women in labour before and during the implementation of the SMDP. The proportion of cases in labour managed by use of partograph and its appropriate use were also determined.

**Results:** Retrieval rate of patients' notes was 86.9% and 89.6% before and during SMDP respectively. Information on sociodemographic characteristics, history taking, general and obstetric examination had a near universal recording in both groups but data on alcohol consumption, smoking, menarche, previous pregnancies and contraceptive use was poorly recorded. There was a significant improvement in recording of diagnosis and plan of management during the SMDP ( $p=0.037$ ). The partograph was used in only 11% of patients before SMDP as compared to 85% during SMDP ( $p=0.000$ ). Record on foetal condition and progress of labour were significantly improved during the SMDP ( $p=0.000$ ). Records on summary of labour likewise significantly improved during the SMDP ( $p=0.02$ ).

**Conclusion:** The quality of record keeping in the intrapartum period at the PGHK greatly improved during the implementation of the SMDP. It would be worthwhile to assess the sustainability of quality of intrapartum records and care a year or so after the SMDP ended.

## INTRODUCTION

Medical Records in the intrapartum period include maternity admission books, patients case notes, the partograph, delivery books and operating theatre register. They play an important role in the management of patients and are used to obtain biodata, clinical features, investigations ordered and their results, diagnosis and treatment. Properly kept and utilised medical records, especially the partograph, in the intrapartum period have been shown, worldwide, to improve the quality of care and outcome of labour and delivery and minimise the Caesarian section rate (1-3). In Kenya, this was demonstrated by Wasike (4) who evaluated the impact of the Ministry of Health partograph on the active management of labour at Moi Teaching and Referral Hospital Eldoret. Wanjara (5) also showed improved outcome of labour when managed using the partograph. In the baseline survey of December 2000 in Western Province as part of the Safe Motherhood Demonstration Project (6) (SMDP) on approaches for providing quality maternal care in Kenya, 243 case records were examined. Standard partograph was used in 23% of normal deliveries, delivery summaries in 72% and other records, mainly admission notes, used in 5% of the cases.

The WHO (1) universal partograph representing synthesised and simplified compromise of the best features of several partographs is an ideal tool in the management of labour both at health centre level as a criterion for referral, and at hospital level as a criterion for active management of labour or operative intervention (1-3).

It is basically a graphic representation of events of labour plotted against time in hours. It consists of three components: a) the foetal condition with emphasis on foetal heart rate, status of the liquor amnii, and degree of moulding; b) the progress of labour monitored using the cervical dilatation, uterine contractions and the descent of the presenting part and finally c) the maternal condition which include the vital signs-blood pressure, pulse, temperature and respiration- along with determination of the urine volume and analysis for proteinuria, glycosuria and ketonuria. These are the components used in monitoring vital events during labour. In increasing the quality or regularity of the critical observations of the foetus, the mother and progress of labour, it has been shown to improve the

outcome of labour and delivery in several studies (1,4,5).

There is scanty literature on the other records apart from the partograph in the intrapartum period. MacInerney *et al* (7), in an audit of care given to mothers in a maternity unit of a large academic hospital found that past medical history was only documented in 54% of the cases admitted. Past obstetric history was documented in close to 70% in comparison with the present antenatal history, which was only reflected in 12% of the records. Foetal heart rate was recorded in only 79% of the cases. Comprehensive vaginal examination findings were recorded in only 18% with instances where recording reflected inadequate knowledge of the procedure.

The objective of this study was to determine the quality of recording vital events during the intrapartum period at the Provincial General Hospital in Kakamega. This quality would provide an indication of the quality of care given to mothers in the intrapartum period in this hospital.

## MATERIALS AND METHODS

*Study design:* This was a retrospective comparative study in which two groups of women were studied in the intrapartum period. The first group of 200 randomly sampled patients' notes included women who delivered between 1<sup>st</sup> September 2000 and 28<sup>th</sup> February 2001 before the implementation of the SMDP. This was compared with the second group, which included 200 women whose case notes were randomly sampled for the period between 1<sup>st</sup> July 2001 and 31<sup>st</sup> December 2001 during the early phase of the implementation of the SMDP. Every tenth file was picked for the study as the records were retrieved chronologically. The data was collected over a period of one month between 1<sup>st</sup> March 2003 and 31<sup>st</sup> March 2003.

*Study area:* The study was carried out in Kakamega Provincial Hospital situated in Kakamega town, which hosts the administrative headquarters of Western Province with a population of 3,358,776 out of whom 770,771 are women in the reproductive age (8). The Provincial General Hospital is a primary health facility for the town population while providing specialised medical services for referred cases in the entire province. The departments include Obstetrics/Gynaecology. Obstetrics has an

operating theatre for both elective and emergency cases.

*Sample size:* Using EPINFO software, the sample size was calculated thus: Percent use of partograph in management of labour before introduction of SMDP-(28%) Percent use of partograph in management of labour during introduction of SMDP-(42%) Confidence level of 95%, that is, the probability that if the two samples differ, this reflects a true difference in the two populations. Power of 80%, that is, the probability that if the two populations differ, the two samples will show a significant difference.

Sample size before introduction of SMDP = 195 rounded up to 200.

Sample size after introduction of SMDP = 195 rounded up to 200.

*Inclusion criteria:* All records of patients who had been admitted to labour ward in the latent or active phase.

*Exclusion criteria:* Pregnancy gestation less than 34 weeks, patients delivered by Caesarian section on an elective basis, patients admitted when in second stage of labour and cases that required emergency caesarian section on admission.

*Study procedure:* A nurse-midwife (a Kenya registered community health nurse KRCHN) and a medical records officer were recruited and trained for the study during the pre-testing. Working with the delivery records and operating theatre register, which provided the sampling frame, 200 case files were picked chronologically by sampling every tenth eligible case between 1<sup>st</sup> September 2000 and 28<sup>th</sup> February 2001. The second group included 200 cases recorded from 1<sup>st</sup> July 2001 to 31<sup>st</sup> December 2001 after the in-service seminar of service providers in the month of May and June 2001. Data was entered in a structured pre-coded questionnaire. Computer analysis included descriptive statistics and appropriate tests applied to determine significant differences in the quality of recording vital information during the intra-partum period.

*Ethical consideration:* Permission to carry out the study was obtained from the Ministry of Health through the Provincial General Hospital Kakamega administration and the Provincial Medical Officer

(PMO). The records were coded and patients' names were not used. The proposal was submitted to, and approval granted by, the Ethical and Research Committee of Kenyatta National Hospital.

## RESULTS

The total number of eligible cases recorded in the delivery book before safe motherhood demonstration project (SMDP) was 2310 while the total number of corresponding files retrieved from the central records was 2009. Retrieval rate was 87%. During the SMDP the retrieval rate was 90%. At least 96% of case files had all demographic data recorded in both groups except religion where only 5% and 4% were recorded respectively.

**Table 1**

*Distribution of recording of sociodemographic characteristics*

Variable	Number of files with records	
	Before SMDP (%)	During SMDP (%)
Name	100	100
Age	100	100
Inpatient number	98	100
Level of education	96	99
Residence	97	99
Religion	5	4

As shown in Table 2, data on main complaints, history of present illness and past medical history were well recorded both before and during the SMDP intervention with over 95% of the records containing these parameters. There was however significant improvement in data recorded on family and social history in 100% of the records. Data on alcohol consumption and smoking improved to 72% and 62% respectively during the intervention period as compared to data recording before SMDP-58% and 55% respectively ( $p = 0.01$ ). Information on last normal menstrual period, expected date of delivery, gestation by dates and parity were recorded with at least 97% frequency during the two study periods. Recording of antenatal care and antenatal tests during the two periods remained at about 80%. The recording of menarche, history of previous pregnancy and contraceptive use did not

**Table 2**  
*Distribution of recorded elements of history taken*

Variable	Number of files with variables recorded			
	Before SMDP	During SMDP	$\chi^2$ (DF)	P-value
	(n = 200) (%)	(n = 200) (%)		
<b>Complaints</b>				
Main complaints	100	100		
History of present illness	95	96		
Past medical history	99	100	0.01(2)	0.284
<b>Family and social history</b>				
Marital status	89	100		
Employment	83	100		
Chronic illness in the family	90	100		
History of twin pregnancy	87	100		
Alcohol consumption	58	72	7.45(1)	0.006
Smoking	55	62	1.73(1)	0.19
<b>Obstetrics/gynaecology history/investigations</b>				
Menarche and characteristics of menstrual cycle	53	62		
Parity	97	99		
If parous, history of previous pregnancy(ies)	45	50		
Contraceptive use	42	47		
Last normal menstrual period	100	100		
Expected date of delivery	100	100		
Gestation by dates	100	100		
Antenatal clinic attendance	88	90		
Antenatal profile (Hb. VDRL, blood group/rhesus)	76	78		

change significantly from the low level before the SMDP. There was an almost 100% data recording of findings on general and obstetric examinations in both groups except the recording of presentation where 91% recorded before SMDP as opposed to 100% recorded during SMDP (Table 3).

As shown in Table 4, diagnosis and plan of management were recorded in 86% and 84% in the first group compared to 100% in the second group which was a significant improvement ( $p < 0.05$ ). Partograph as an intrapartum record was used in only 11% of the first group as compared to the second group where it was used in 85% of the cases ( $p = 0.000$ ). In Table 5, the 22 case notes in the first group in which the partograph was used were compared with 171 case notes in the group during SMDP where the partograph was used. This was undertaken in order to elicit the appropriateness of use of partograph in both groups. The foetal condition and progress of labour data records significantly improved during the SMDP with 100% recording except for moulding and caput 76% and

77% respectively ( $p=0.000$ ). Recording of maternal blood pressure, pulse, temperature, and respiration showed significant increase from less than 76 % to over 90% during the SMDP intervention ( $p < 0.004$ ). However, the three important parameters assessed during urinalysis (ketonuria 25 vs 43;  $p = 0.0002$ , proteinuria 30 vs 45;  $p = 0.002$ , urine volume 34 vs 60;  $p = 0.0000$ ) though improved in the intrapartum period remained inadequately recorded during the implementation of the SMDP.

Table 6 shows marked improvement in recording duration of labour in the second group especially duration of 1st stage of labour where there was 87% recording in the first group compared to 96% in the second group ( $p=0.02$ ). There was a lower recording of duration of 2nd and 3rd stages of labour in both groups (71% - before; 78% - during). Important parameters during the fourth stage of labour were also more comprehensively recorded in the second group with the greatest improvement in blood loss assessment (77% before; 96% - during;  $p=0.02$ ). The lowest recorded parameter here was

**Table 3**  
*Distribution of examination recording*

Variable	Number of files with variables recorded	
	Before SMDP (n = 200) (%)	During SMDP (n = 200) (%)
Pallor	100	100
Oedema	100	100
Jaundice	99	100
Fundal height	100	100
Lie	100	100
Presentation	91	100

**Table 4**  
*Distribution of recording of diagnosis, plan of management and partograph use*

Variable	Number of files with variables recorded		
	Before SMDP (n = 200) (%)	During SMDP (n = 200) (%)	P-value
Diagnosis	86	100	0.037
Plan of Management	84	100	<0.05
Partograph use	11	85	0.000

**Table 5**  
*Distribution of recording of foetal condition and progress of labour*

Variable	Number of files with variables recorded		P-value
	Before SMDP (n = 22) (%)	During SMDP (n = 170) (%)	
<b>Foetal condition</b>			
Foetal heart rate	100	100	
Status of membranes and liquor	86	100	0.00
Degree of moulding	82	76	0.51
Caput	74	77	0.64
<b>Progress of labour parameters</b>			
Cervical dilatation	86	100	0.0000
Descent of presenting part	86	100	0.0000
Uterine contractions	91	100	0.0001

the status of cord (67% -before; 76% during;  $p=0.02$ ). Recording about the newborn was almost 100% in both groups. Information on the mode of delivery was available in 100% of the records during the two periods. About 74% of the mothers in the first group had spontaneous vertex delivery in comparison with the second group where the number increased to 78.5%. The rate of vacuum extraction was the same while the number of women delivered by Caesarean section in first group (24.3%) was more than in the second group (20%).

In Table 7, there was 100% record on duration of labour and Apgar score before and during the SMDP. Improvements in data storage during the implementation of the SMDP improved overall. The patient's intrapartum notes were recorded 100% in both groups. Data recording and keeping of other parameters i.e. treatment sheet, observation chart antenatal records were more effectively kept in the second group (88% - 99.5%) compared to 48% - 94% in the first group.

**Table 6**  
*Percent recording of summary of labour*

Variable	Number of files with variables recorded		P-value
	Before SMDP (n = 200) (%)	During SMDP (n = 200) (%)	
<b>Duration of labour</b>			
First stage	75	96	0.001
Second stage	72	78	0.13
Third stage	71	78	0.11
<b>Fourth stage parameters</b>			
Blood pressure measurement	77	96	0.000
Status of placenta	73	76	0.6
Syntocinon/Ergometrine	78	90	0.003
Status of membranes	75	85	0.013
Status of the cord	67	76	0.06
<b>New born</b>			
Status	99	100	
Sex	100	100	
Birth weight	100	100	

**Table 7**  
*Percent recording of duration of labour, Apgar score and comprehensiveness of storage*

Variable	Number of files with variables recorded		P-value
	Before SMDP (n = 200) (%)	During SMDP (n = 200) (%)	
Duration of labour	100	100	
Apgar score	100	100	
<b>Comprehensiveness of storage</b>			
Patients' inpatient notes	100	100	
Treatment sheet	48	88	0.0000
Observation chart	87	99	0.0000
Newborn notes	50	97	0.0000
Postnatal cards	94	95	0.8
Antenatal notes	43	96	0.0000

## DISCUSSION

The study showed a good record retrieval rate of 87% in the group before the SMDP and 90% in the group during the implementation of SMDP. The demographic data, taken in the admission room for all patients due for admission by the nurse on duty, were well recorded before ( $\geq 96\%$ ) and during the SMDP implementation ( $\geq 99\%$ ) except religion which was poorly recorded in both groups. This may be attributed to the fact that religion is hardly over referred to in management of labour or administratively.

History taking plays an important role in making a diagnosis and plan of management in the intrapartum period. Main complaints, history of present illness and past medical history were equally well recorded in 95% and over of the records during both periods of study. Recording of family and social history, marital status, employment, chronic illness in the family and history of twin pregnancy was greatly improved during the SMDP implementation (99% - 100%) compared to before SMDP (83% - 90%).

The recording of menarche, history of previous pregnancy and contraceptive use remained at a low level during the SMDP. Menarche and characteristics of menstrual period help to ascertain the last normal menstrual period. Knowledge of contraceptive use helps ascertain the character of menstrual flow prior to conception while history of previous pregnancies is important in the management of intrapartum period. In this study, these parameters were poorly recorded before the SMDP (42% and 45% respectively) with no appreciable improvement during the SMDP (47% and 50% respectively). In comparison with an audit of care given to mothers in a maternity unit in a large academic hospital, MacInerney *et al* (17) found that past medical history was documented in only 54% of the cases admitted. Antenatal clinic records in PGHK improved from 88% in the first group to 90% in the second group. This was much better than in the MacInerney audit where present antenatal history was reflected in only 12.2% of the records (7).

General and obstetric examinations were well documented before SMDP (91%-100%) and during the SMDP (100%). There was an improvement in documentation of diagnosis and plan of management from about 88% and 84% respectively before SMDP to 100% and 96% respectively, during the SMDP.

The most important document in the intrapartum period is the partograph. It is only useful if well documented and timely action is taken (10-14). Despite the ample demonstration by WHO of the superiority of a partograph as an intrapartum monitoring tool, it has only been extensively used in a few countries (12). In this study the partograph was used only in 11% of the patients in the first group compared to 85% in the second group. The SMDP mostly targeted the intrapartum period and there was a great impact. It must be noted that most of the mothers managed by partograph in the first group were study cases by student midwives from the Kenya Medical Training Centre Kakamega. It was therefore not routine to complete a partograph in Kakamega before the introduction of SMDP.

For the purposes of comparing the appropriateness of use of partograph, the 22 cases in which a partograph was used in the first group were compared with 171 cases in the second group where the partograph was used. It is appreciated that study patients by student nurses could bias the results and may not accurately reflect the standard

practice of record keeping in the intrapartum period in the hospital.

All parameters on the foetal condition and progress of labour in the group during the SMDP implementation were documented. In the group before SMDP, status of membranes, cervical dilatation and descent of presenting part were recorded in 20 out of 22 partographs (91%). In a set up where monitoring of labour by partograph was not routine it is commendable that only 2 out of 22 partographs mostly filled by student midwives failed to record parameters on foetal condition. During the SMDP on the other hand, the importance of monitoring the foetal condition was fully appreciated and its parameters recorded. However, the data only reflects recording of the parameters without mention of the frequency with which they were observed and recorded i.e. half hourly for foetal heart rate and status of membranes and liquor amnii and every four hourly for the others, during the active phase of labour.

Appreciation of moulding, caput formation and significance of a crossed alert line and more so the action line is the hallmark in the diagnosis of abnormal progress of labour long before it becomes prolonged and obstructed (1). In this study, on average, 23% of the partographs both before and during SMDP had no record of degree of moulding and caput formation. This is an area that needs to be revisited both in the KMTC Kakamega and continuous medical education among trained staff in PGH Kakamega. This compares with MacInerney's study where only 18% of the records had complete vaginal examination findings.

In Njoroge's study carried out at a rural district in Kenya, 50% of the health care workers had low knowledge of the partograph (14). The study also showed that the ability to use parameters on the partograph to make decisions was low and of the respondents, 60% could not apply the findings on the partograph to make a decision on active management of labour.

Monitoring the maternal condition is one of the major components in management of labour. Blood pressure measurement helps in diagnosing and monitoring such conditions as preeclampsia / eclampsia and shock while, monitoring of pulse, respiration rate and temperature helps in assessing the general condition of the patient. There was marked improvement in monitoring and recording

of all these parameters during the SMDP. At the same time the recording of urinalysis and monitoring for ketonuria, and proteinuria, being the quickest means of assessing renal functions, which are adversely affected in such conditions as PET/Eclampsia, shock, and diabetic ketoacidosis improved moderately during the SMDP.

Summary of labour was generally well documented in both groups, the difference being that the majority of labour summaries in the group before SMDP were not recorded on a partograph, which was used in only 11% of the cases. Apart from the partograph the data was sourced from admission notes, intrapartum case notes and discharge summaries. A general improvement in recording summary of labour was noted during the SMDP. The most significant improvement was blood pressure assessment during SMDP. Comprehensiveness of record storage was greatly improved during the SMDP, notably the treatment sheet which was retrieved in 48% of cases in first group compared to 88% of cases in second group. Likewise new born notes and antenatal notes were retrieved in 50% and 43% respectively before the SMDP as compared to about 97% and 96% respectively during the SMDP.

### CONCLUSION

The quality of records in the intrapartum period at the PGH Kakamega before the introduction of SMDP was poor, especially the dismal use of partograph. With the introduction of SMDP the record keeping drastically improved and the partograph was incorporated in the management of labour. Continuous medical education and seminars for all medical personnel through such projects as SMDP should be extended across the country to revive and sustain good obstetric care and recording during labour and delivery through appropriate partograph use among other measures. Sustained provision of stationery and supervision by managers would ensure uninterrupted record keeping in health delivery centers.

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