DELIVERY CRITERION–BASED AUDITING SYSTEM AT TWO HEALTH FACILITIES IN ERBIL CITY-IRAQ

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ABSTRACT

Background

Criterion based audits of medical care and services have developed over the last 15 years. Criterion based audit is a well- known approach or tool for improving the quality of care in maternal units.

Objective

The aim of this study was to assess the quality of care provided for normal deliveries in Erbil city, Iraq.

Methods

The study extended from 1st of April to the 30th of June 2009. A total of 1299 normal and 120 complicated birth records from the Maternity Teaching Hospital and Mala-Afandy Health Center were reviewed. The WHO questionnaire on Safe Motherhood Needs Assessment was adapted for this study. An initial assessment of the current practice was made by collecting information on five monitoring procedures or criteria (vaginal examin ation, fetal heart monitoring, blood pressure monitoring, birth weight measurement, and assessment of the condition of the newborn) then it was compared to the standard (norm).

Results

Vaginal examination, fetal heart monitoring, blood pressure measurement and birth weight were recorded in 92.8%, 98.8%, 97.1% and 96.7% of total records, respectively. Substandard practices for vaginal examination, fetal heart monitoring, and blood pressure measurement were 69.6%, 45.4%, and 68.7% respectively. Partograph forms were available in labour rooms, but they were not in use. Assessment of the condition of newborn was not recorded.

Conclusions

The overall quality of care was poor with no use of partography. There is a need for development of clinical guidelines and protocols.

Keywords: *Auditing, Partograph, Substandard practices.*

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INTRODUCTION

Criterion based audits (also called clinical audit) of medical care and services have developed over the last 10 to 15 years [1] Criterion based audit is a well- known approach or tool for improving the quality of care in maternal units [2]. It is strongly supported by expert opinion as well as national and international organizations including the WHO and the National Institute of Clinical Excellence (NICE) in the UK. NICE defines audit as: "A quality improvement process that seeks to improve patient care and outcomes through systematic review of care against explicit criteria and implementation of change. Aspects of structure, processes, and outcomes of care are selected and systematically evaluated against explicit criteria. Where indicated, changes are implemented at individual, team, or service level and further monitoring is used to confirm improvement in healthcare delivery [3].

Increasing the effectiveness and efficiency of health services is important everywhere but particularly so in developing countries [4] . In the UK, clinical audit is seen as a useful, but not always effective tool in quality improvement. There are remarkably few reports on the benefits of clinical audit in the developing world, though audit has been used in maternity care as part of the Safe Motherhood Initiative [5].

In criteria based audit the first step is the development of standards. Traditionally, standards have been developed by systematic reviews to identify sets of criteria that constitute optimal care. Once standards have been developed, actual practice is measured and compared with standards (best practice), gaps in current practice are identified, recommendations are made and implemented, and progress is evaluated [6]. Partogram use has become routine in the management of labour in many countries around the world, and can be helpful in the management and decision making process [7].

Useful information on the quality of care in maternal units can be collected quickly from reviewing a sample of clinical records. The review will serve two general purposes: to determine whether procedures were recorded properly and to evaluate case management of certain tracer conditions [8].

Up to our knowledge criteria based auditing has not been performed before in Erbil city; therefore this study was carried out to assess the quality of care provided for normal deliveries at the Maternity Teaching Hospital and Mala-Afandy Health Center in Erbil city, Iraq through assessing application of five monitoring procedures.

SUBJECTS AND METHODS

This cross- sectional study was undertaken in the Maternity Teaching Hospital and Mala-Afandy Health Center in Erbil city. The Maternity Teaching Hospital is the only public maternal hospital in Erbil city. It provides delivery care services, including medical termination of pregnancy, caesarean section blood transfusion. It is largely equipped to cope with emergencies and services are available 24 hours a day. The hospital serves the whole population of Erbil governorate. The number of deliveries at the hospital was 22,387 in 2008 with institutional delivery coverage rate of 53.6% according to Directorate of Health in Erbil city. Mala-Afandy Health Center is the only primary health care center (PHCC) with a labour room. It provides normal vaginal delivery services only.

The annual number of institutional deliveries for each district of Erbil governorate was calculated by multiplying the population of each district by crude birth rate (30/1000 population) and institutional delivery rate for Kurdistan Region (67.8%) according to the Multiple Indicator Cluster Survey [9]. The sample size for each district was calculated by Epi-info version 7 using 95% confidence level and 10% confidence interval as recommended by WHO [10]. Accordingly, a total sample of 1262 was required from Erbil governorate. However, a sample of 1300 was obtained from Erbil district only using a systematic random sampling technique to select the required birth records (1000 records from the Maternity Teaching Hospital and 300 from Mala-Afandy Health Center in Erbil District) taking into consideration the institutional delivery coverage rate for each facility.

Normal birth records for the year 2008 were reviewed to assess the quality of care provided. The normal record review questionnaire on Safe Motherhood Needs Assessment (SMNA) Kit was adapted for this study [10] . The first step carried out was an initial assessment of the situation and measurement of current practice by collecting information on five monitoring procedures or criteria (vaginal examination, fetal heart monitoring, blood pressure monitoring, birth

weight measurement, assessment of the condition of the newborn), according to the WHO report of a technical working group [11]. The second step was comparing the current practice to the standard (norm). The WHO, recommends performing vaginal examination once every 4 hours [12]. The Safe Motherhood Needs Assessment Kit of the WHO recommends that fetal heart rate monitoring and blood pressure monitoring to be done at least hourly[10]. Other data requested were on availability and use of partography.

The study extended from 1st of April through the 30th of June 2009. The study was approved by the Scientific Committee of the College of Medicine of Hawler Medical University (which covers the duties of the Ethics Committee) and by the Directorate General of Health of Erbil City.

Data were analyzed using the SPSS statistical software package for personal computers. Discrete variables were expressed as percentages and presented as frequency tables and cross tabulation. Chi-square was used to test for association between proportions. P-values less than 0.05 were considered statistically significant.

RESULTS

Vaginal examination, fetal heart monitoring, blood pressure measurement and birth weight were recorded in 92.8%, 98.8%, 97.2% and 96.7% of the total records respectively (Table 1). Assessment of the newborn condition (Apgar score) was not recorded in normal delivery records. In complicated delivery records the Apgar score was recorded in 92 out of 120 (76.6%) records only.

Tables 2, 3, and 4, revealed inconsistency in recording of vaginal examination, fetal heart monitoring, blood pressure measurement. Duration of admission to delivery room was lacking in 129 out of 1299 records (10%).

Vaginal examinations, fetal heart monitoring and blood pressure measurements were judged to be substandard in 69.6%, 45.4% and 68.7% of the records using WHO criteria as standard (Table 5).

A positive correlation of number of vaginal examinations ($r = 0.77$, $p=0.002$), fetal heart monitoring ($r = 0.81$, $p=0.014$), and blood pressure measurements ($r = 0.53$, $p=0.003$) with duration of admission was demonstrated.

The partography form was available in normal delivery records. However, the findings were not plotted (recorded) on the form. No antenatal care information was provided, and temperature and pulse were not recorded in the records. The information in the birth records were improperly written, incomplete or inaccurate.

Table 1. Assessment of normal delivery practice, using five monitoring procedures.

Monitoring procedures	Maternity Teaching Hospital		Mala-Afandy Health Center		Total records	
	No.	(%)	No.	(%)	No.	(%)
Vaginal examination	919	(91.9)	287	(95.7)	1206	(92.8)
Fetal heart Monitoring	990	(99.9)	293	(97.7)	1283	(98.8)
Blood pressure measurement	969	(96.9)	293	(97.7)	1262	(97.2)
Birth weight recording	957	(95.8)	299	(99.7)	1256	(96.7)
Assessment of the fetal condition recorded	0	0	0	0	0	0
Total	999		300		1299*	

***Total sample was 1300 records, one record was missing during data entry.**

Table 2. Number of vaginal examination versus number of hours from admission to delivery in normal delivery records.

No of vaginal examination	Number of hours from admission to delivery as recorded in the records											Total No (%)
	Not recorded	1h	2h	3h	4h	5h	6h	7h	8h	9h	≥10	
Not recorded	38	37	6	1	4	1	2	1	_	1	2	93(7.15)
Once	50	237	23	4	4	1	_	_	_	_	1	320(24.63)
Twice	22	7	205	84	37	20	6	5	6	_	_	392(30.17)
Three times	7	1	12	56	32	22	25	10	4	2	1	172(13.24)
Four times	6	_	4	6	27	18	27	12	22	5	41	168(12.93)
Five times	3	_	_	1	2	4	10	7	6	5	12	50(3.84)
Six times and More	3	_	_	1	4	4	9	5	17	4	57	104(8.00)
Total	129	282	250	153	110	70	79	40	55	17	114	1299

Table 3. Number of fetal heart monitoring versus the number of hours from admission to delivery room in normal delivery records.

No of fetal heart monitoring	Number of hours from admission to delivery as recorded in the records											Total No (%)*
	Not recorded	1h	2h	3h	4h	5h	6h	7h	8h	9h	≥10h	
Not recorded	15	1	_	_	_	_	_	_	_	_	_	16(1.23)
Once	73	273	27	7	3	2	_	_	_	_	1	386(29.71)
Two times	21	7	206	83	38	21	6	5	4	_	_	391(30.10)
Three times	8	1	12	54	32	16	21	9	3	1	1	158(12.16)
Four times	5	_	5	5	31	21	31	9	19	6	28	160(12.31)
Five times	2	_	_	2	2	6	11	7	6	2	3	41(3.15)
Six times and more	5	_	_	2	4	4	10	10	23	8	81	147(11.31)
Total	129	282	250	153	110	70	79	40	55	17	114	1299(100)

***Column percent**

Table 4. Number of blood pressure measurements versus number of hours from admission to delivery.

Number of blood pressure measured and reported	Number of hour from admission to delivery as recorded on the record.											Total No(%)
	Not recorded	1h	2h	3h	4h	5h	6h	7h	8h	9h	≥10	
Not recorded	24	7	3	0	0	2	_	_	1	_	_	37(2.84)
Once	87	273	167	100	60	34	47	22	25	8	18	841(64.74)
Twice	13	2	78	46	47	32	23	15	21	6	41	324(24.94)
Three times	2	_	2	6	1	2	5	2	3	_	17	40(3.07)
Four times	3	_	_	1	2	_	3	_	5	2	35	51(3.92)
Five times	_	_	_	_	_	_	1	_	_	_	_	1(0.70)
Six times & more	_	_	_	_	_	_	_	1	_	1	3	5(0.30)
Total	129	282	250	153	110	70	79	40	55	17	114	1299(100)

Table 5. Number of records with monitoring procedures of labour progress at facilities in Erbil city*.

Monitoring procedures	Not recorded	Substandard	Monitored to standard
	No (%)	No (%)	No (%)
Vaginal examination	93(7.9)	814(69.6)	263(22.5)
Fetal heart monitoring	16(1.4)	531(45.4)	623(53.2)
Blood pressure measurements	37(3.2)	804(68.7)	329(28.1)

*** Records not having duration of labour were excluded (129).**

DISCUSSION

In this study criteria-based audit was conducted and management practices were evaluated against standards developed by the WHO [7, 10]. This study is based on documented care, which is a limitation. However, lack of documentation does not necessarily mean that care has not been given [13, 14]. A fact which has been emphasized by other workers as birth records are principal sources of information regarding the pregnant women's intrapartal care [15]. However, incomplete or inaccurate information in the birth records and their improper writing made the interpretation of the data difficult.

Methodological concerns should be kept in mind when interpreting the findings of the study; the data rely on recorded care rather than observed practices or routines as observation takes long time. However, observation also does not eliminate the possibility that providers could change this behavior to conform to what they think should be done [9].

In this study the sample size was calculated separately for each district according to WHO recommendations [10]. However, only Erbil district was selected for carrying out the study as the Maternity Teaching Hospital is the only referral hospital in Erbil governorate providing basic and comprehensive services.

Monitoring of indicators of the performance in the current study was not done according to the recommended WHO standards. Duration of labour was not recorded in 10% of the records; a finding which is higher than that reported in Cote d lvoire [16] (2%) and it is much lower than the figure reported in Tanzania (50%) [17]. Monitoring of vaginal examination was substandard in 69.6% of the records. A slightly lower figure was reported in Tanzania (61%) [17] and much lower figures were reported in Uganda (14.2%) [18] and Eritrea (25.8%) [19]. Fetal heart monitoring was substandard in 45.4% of the records. This finding is in agreement with that reported in Albania (40%) [20]. Higher figures were reported in Tanzania (86%)[17] and Eritrea (52.5%) [19]. Blood pressure monitoring was substandard in 68.7% of the records. This finding is consistent with that reported in Eritrea (63.7%) [19]. Lower figures were reported in Uganda (42.3%) [17], Albania (34%) [20] and Tanzania (29%) [17] studies.

The findings of this study indicate that the WHO recommendations were only partially followed. Practices that are demonstrably useful and should be encouraged such as pulse and temperature measurement were not documented. Although the WHO standard criteria clearly differentiate normal from abnormal progress in labour and identify those women likely to require intervention, the wide diversity in the obstetric practices reported in the records, could be attributed to lack of written polices or standard birth procedures with no mechanisms for evaluation. Ogwang *et al.* [18] in Uganda attributed the high rate of substandard practice to the fact that monitoring of labour is a very detailed work and the health workers in the labour room have other duties, while in Eritrea study [19] it was attributed to the fact that the staffs were not trained on monitoring parameters of labour. Similar factors may have contributed to the high rate of substandard practice revealed by this study. In addition to that, the large number of deliveries (30-60 delivery per day) at the Maternity Teaching Hospital probably has made monitoring of each delivery a difficult task for the staff.

In the current study 20 % (273/1299) of women gave birth within one hour; a similar finding has been given by other workers in Cote d lvoire [16] and Ghana [21]. Women usually arrive with fully dilated cervix; therefore monitoring of parameters of labour was done only once and the partograph could not be used [21]. Therese *et al* .[16] in Cote d Ivoire emphasized the need for better understanding of the barriers for early admission in labour if quality of care has to be improved.

The observed strongly significant positive correlation of each of vaginal examinations, fetal heart monitoring, and blood pressure measurements with duration of stay in the labour room is an expected finding; however, such monitoring procedures were done more frequently than recommended by the WHO [10,12] due to lack of written policies or standard birth practices. Similar findings were reported in Baghdad, Iraq [22].

In conclusion, the overall quality of care was poor with no use of partography. There is a need for development of clinical guidelines and protocols and for development and implementation of

appropriate medical records and development of a monitoring system for clinical activities. The findings of the current study need to be reported to the staff in the maternity unit and to be used in quality improvement programme.

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