A Review of Admission Records of Neonatal Unitof Bingham University Teaching Hospital, Jos. Plateau State, Nigeria.

Shehu M *[1], Dusu C[2], Davou KN[2], Mava Y[1], Eseigbe EE[1],Yakubu AM[1].

[1]Department of Paediatrics, College of Medicine and Health Sciences, Bingham University/Teaching Hospital, Jos
[2]Department of Paediatrics, Bingham University Teaching Hospital, Jos

Abstract:
Background*: Clerking is the first and most important procedurewhich a doctor has at first contact with a patient or patients' relations. This provides an opportunity for the physician to obtain vital data which on documentation forms the initial records of the patient which may not be available later. The aim of the study was to assess the clerking of preterm babies admitted into the neonatal unit of the hospital.*
Methods*: A retrospective study on all the preterm babies that were admitted into the neonatal unit of the hospital from January 2018 -December 2018.*
Results*: A total of 324 babies were admitted into the unit during the period under review. Preterm babies made up 29.3% (95) of the total admissions. Male to female ratio of 1:1.2. No sex recording for 1% of them, no gestational age recorded for 25% of the preterm babies and no mothers age, parity, religion, job and tribe in 47%, 40%, 3%, 60% and 10% respectively. The risk factor for prematurity that was most documented were estimated gestational age (EGA) and history of maternal fever with 74% and 75% respectively, while the least documented were the maternal weight gain and Packed Cell Volume (PCV) with 0% record. Diagnosis was recorded in 100% of cases. However, some important information waslacking on risk factors.*
Conclusion*: The documentation on prematurity clerking weredeficient in some important biodata and risk factors. There is room for improvement.*
Keywords*: Documentation; Prematurity; Medical records; Jos.*

I. Introduction

Medical records comprises documentation of biodata, history, clinical findings, diagnostic test results, preoperative care, operation notes, post-operative care, and daily notes of a patient's progress and medications, outcomes and follow-up if relevant(1). Clerking is an integral part of medical records, in spite of all of the technology available today, the history is still the mainstay of diagnosis (2). Clerking is the first and most important contact that a doctor has with the patient. It gives the opportunity for the clinician to obtain the information that may not be available later in the admission if recorded improperly(3). If done properly, it results in a good provisional diagnosis and management plan. The first contact the patients have with the doctor before admission to hospital is usually the easiest and the best time to take a complete and detailed history, provided the patient does not present as an emergency (3).

Accurate and complete documentation of medical records is said to be a key performance indicator in the delivery of healthcare services in the hospital (4). Improving medical record completeness service is an important step towards enhancing the quality of healthcare. It can also provide valuable information to help measure progress and effectiveness) (4). In a study done by Zegers et al, (5) to find out if the quality of patient record keeping is an indicator of the quality of care: the results showed that the absence of record components wasassociated with lower rates of adverse events (AEs), suggesting that missing record components lead to an underassessment of AEs in record-review studies. In contrast, poor quality of the information present in patient records was associated with higher rates of AEs, implying that the quality of the information contained in the patients record was a predictor of the quality of care(5). Tola et al (4) also agreed that complete medical record review is the most scientific method of investigating AEs in hospitals.

Failure to fully document and make available notes can lead to delay and error in patient treatment (6)(7)(8). A study by Motamedi et al showed that poor documentation can affect continuity of patient care, particularly during care transitions(9). Poor documentation resulted in longer median time to order resolution compared with complete documentation (31 vs 10 min, p =0.02) (10).

For effective communication to take place between healthcare professionals, patient information must be recorded as accurately as possible (6). Complete and accurate patient medical information can bring about

---

easier communication between healthcare professionals involved in patient care which needs a multidisciplinary approach, both in hospital and upon discharge into the society (11)(12).

Therefore one must, "keep clear, accurate, and legible notes, report relevant clinical findings, document decisions made and by whom(13). The legal system relies mainly on documentary evidence in a situation where a patient or relative accuse a Doctor of Medical negligence. The clinician notes are very often the most important evidence deciding on the sentencing or acquittal of the doctor. "Poor records mean poor defense; no records mean no defense"(1).

Representative documentation is also important for research, audit, and quality improvement purposes (14)(15). It helps in the scientific evaluation of patient profile, analyzing the treatment results, and to plan treatment protocols. Proper documentation also helps in planning governmental strategies for future medical care. There is need for accurate and complete documentation with the increasing use of medical insurance for treatment, because they require proper record keeping proving the patient's demand for medical expenses. Improper record keeping can result in declining medical claims (1).

A lot of interventional studies in different aspect of specialties of medicine has been carried out in order to improve medical records documentation to improve health care delivery. The use of proformas/template forms, educational talks, reminders, electronic health records introduction of shifts and reduction of working hours, employment of clinical development experts have been shown to improve documentation of health professionals (3)(5)(4)(16)(15)(6)(17)(18)(19)(20)(21).

Medical record documentation is inadequate in developed countries and poor especially in developing countries,(19), (22). A lot is been done in order to improve the quality of documentation in health care facilities especially in the developed countries. It is discouraging to note that despite knowing the importance of proper record keeping, nothing is actively being done to improve quality documentation in developing countries. This study was carried out on the documentation of preterm babies admitted into the neonatal unit of Bingham University Teaching Hospital in order to identify the gaps if any in documentation and to proffer solution for improvement.

II. Subjects and Methodology

Admission into the special care baby unit of Bingham University Teaching Hospital Jos is done by the first on call who is usually the house officer, this is then reviewed by the second on call who is usually the medical officer or the resident on call. The documentation of the admission note is hand written by the house officer and kept in a folder.

Study design: This was a retrospective study

Study location: Special care baby unit of the Paediatric department of Bingham University Teaching hospital, Jos Plateau State, Nigeria.

Study duration: January 2018- December 2018

Sample size:95

Subject & selection method: All the folders of babies admitted in to the special care baby unit between January -December 2018 were retrieved and reviewed. Subjects were then selected by consecutive sampling of all the preterm neonates admitted into the inborn and out-born Special care baby unit (SCBU)of Bingham University Teaching Hospital, Jos between the period of January 2018-december 2018.

Inclusion criteria: All preterm babies admitted into the SCBU of Bingham University Teaching Hospital, Jos between the period of January 2018-december 2018.

Exclusion Criteria: All term babiesadmitted into the SCBU of Bingham University Teaching Hospital, Jos between the period of January 2018-december 2018.

Ethical Clearance: Approval was obtained from the Research Ethical Committee of Bingham University Teaching Hospital, Jos.

Procedure methodology: Preterm babies were defined as babies born before 37th gestational age. The admission notes of the babies were retrieved and their biodata, pregnancy history, delivery history, family and social history, clinical diagnosis of prematurity and duration of hospital stay were obtained.

Statistical analysis: Data was analyzed using Statistical Package for Social Science (SPSS) version 22. Frequency tables were used to show frequencies of documented and missing data, pie chart was used to show the percentage of missing data in each of the major domain, while chi- square test was used to show if there were any statistical difference between the documented and missing data in the inborn compared to the out born. The level of significance was set at P value less than 0.05.

III. Results

The biodata of premature babies showed that name had the highest data documented, 95 (100%), while the least was marital status with 57 (75.8%). Risk factors like mothers' weight gain during pregnancy and PCV level was not documented at all, while history of fever and estimated gestational age had the highest documentation with 71 (74.7%) each. APGAR score which is a prognostic factor had 52 (54.7%).

Table no.1. documented and missing data

Variables	Documented (%)	Not stated (%)
Biodata		
Mothers name	95 (100.0)	0 (0.0)
Sex of the baby	94 (98.9)	1 (1.1)
Age of baby at presentation	72 (75.8)	23 (24.2)
Tribe	85 (89.5)	10 (10.5)
Religion	92 (96.8)	3 (3.2)
Marital status of the mother	57 (75.8)	38 (40.0)
Risk factors for prematurity		
Estimated gestational age	71(74.7)	24 (25.3)
Antenatal attendance	68 (71.6)	27 (28.4)
Parity	57 (60.0)	38 (40.0)
History of fever	71 (74.7)	24 (25.3)
History of foul vaginal discharge	64 (67.4)	31 (32.6)
History of PROM	61 (64.2)	34 (35.8)
Mothers age	50 (52.6)	45 (47.4)
Mothers occupation	38 (40.0)	57 (60.0)
History of mothers' weight gain in pregnancy	0 (0.0)	95 (100.0)
Mothers Height	0 (0.0)	95 (100.0)
History of hypertension	66 (69.5)	29 (30.5)
History of diabetes mellitus	58 (61.1)	37 (38.9)
History of smoking	14 (14.7)	81 (85.3)
History of drinking alcohol	9 (9.5)	86 (90.5)
Mothers PCV	0 (0.0)	95 (100.0)
Prognostic factors		
APGAR score	52 (54.7)	43 (45.3)
Mode of delivery	69 (72.6)	26 (27.4)
Birth weight	83 (87.4)	12 (12.6)
Discharge weight	84 (88.4)	11 (11.6)
Duration of hospital stay	94 (98.1)	1 (1.1)
Diagnosis	95 (100.0)	0 (0.0)

Comparing the inborn and out born missing data showed that there was a significant difference between the out born and inborn missing data on religion, baby's age, birth weight, premature rupture of membrane, fetal distress, alcohol, smoking and mothers occupation with p values of 0.004, 0.002, <0.001, 0.001, <0.001, < 0.001, < 0.001 and 0.004 respectively.

Table no.2. Comparison of inborn to out born recorded and missing data

Variable	Inborn (n= 95)	Out born (n= 25)	p value
Sex			
Recorded	69	25	0.5361*
Not recorded	1	0	
Tribe			
Recorded	63	22	0.7663*
Not recorded	7	3	
Religion			
Recorded	70	22	0.004*
Not recorded	0	3	
Marital status			
Recorded	39	18	0.1538
Not recorded	31	7	
Baby's age			
Recorded	47	25	0.0016
Not recorded	25	0	
APGAR Score			
Recorded	40	12	0.4305
Not recorded	30	13	
Mode of delivery			
Recorded	50	19	0.6599
Not recorded	20	6	
Birth weight			
Recorded	68	15	<0.001*
Not recorded	2	10	
Discharge weight			
Recorded	63	21	0.4405*
Not recorded	7	4	
Duration of hospital stay			
Recorded	68	25	0.7865
Not recorded	2	0	
Gestational age			
Recorded	51	20	0.4805

|			
Not recorded	19	5	
ANC attendance			
Recorded	48	20	0.2780
Not recorded	22	5	
Parity			
Recorded	40	17	0.3415
Not recorded	30	8	
Fever			
Recorded	53	18	0.3415
Not recorded	17	7	
Vaginal discharge			
Recorded	51	13	0.0562
Not recorded	19	12	
PROM			
Recorded	54	7	<0.001
Not recorded	16	18	
Fetal distress			
Recorded	50	2	<0.001
Not recorded	20	23	
Mothers weight			
Recorded	0	0	0.7320*
Not recorded	70	25	
Mothers height			
Recorded	0	0	0.7320*
Not recorded	70	25	
Mothers PCV			
Recorded	0	0	0.7320*
Not recorded	70	25	
Mothers age			
Recorded	29	11	0.8231
Not recorded	41	14	
Alcohol			
Recorded	0	9	<0.001
Not recorded	70	16	
Smoking			
Recorded	0	14	<0.001
Not recorded	70	11	
Hypertension			
Recorded	51	15	0.2314
Not recorded	19	10	
Diabetes Mellitus			
Recorded	45	13	0.2808
Not recorded	25	12	
Mothers occupation			
Recorded	22	16	0.004
Not recorded	48	9	
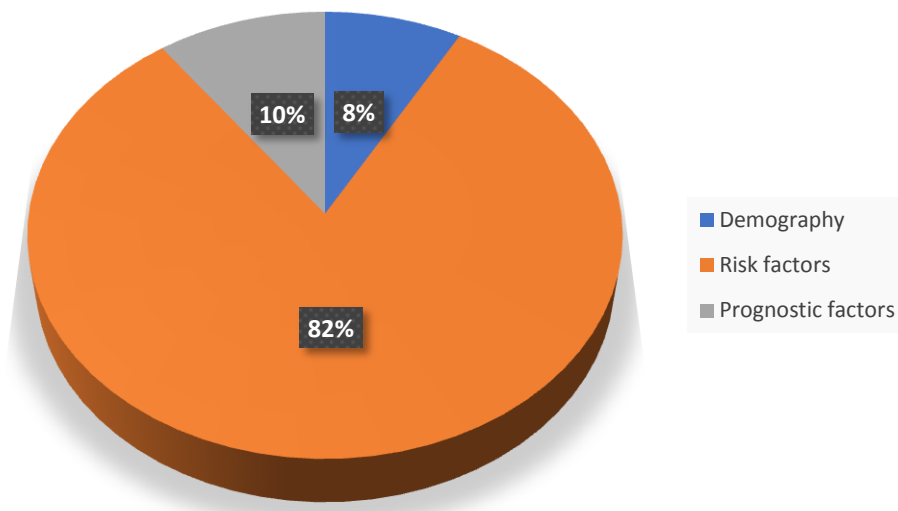
Figure no. 1. The percentage of missing data on each variable
The data that captures risk factors had the highest missing data, followed by prognostic factors.

IV. Discussion

In this study, on the clerking of preterm babies,'the records on marital status of the mothers showed a high rate of non-recording that is 40%. This is important because the emotional and social support and the care given to mothers by their partners during pregnancy has been reported to prevent preterm deliveries (23), the lack of this data can impede studies trying to know the role played by emotional and social risk factors in preterm delivery. The documentation of biodata like sex, religion, tribe and baby's age were incomplete. These demographic data are very important in terms of research and audit purposes (13, 15). Furthermore, when there is a medico-legal problem, these poor documentations of biodata can lead to poor defense (1). The missing data for sex and tribe was 1% and 10.5% respectively in this study, which was better than the 17% and 26% gotten as part of missing data on sex and ethnicity by Abernethy et al (24).

The set of written information on the risk factors of prematurity was poor with information like the mothers PCV, height and weight gain not documented at all, others like mother's occupation has 40% documentation, parity 60% and history of PROM 64%. This is poor compared to the documented data of Chaturvedi et al where the documented mothers PCV was 55%, parity 96%. The disparity in documentation could however be explained by the fact that the study of Chaturvedi et al (22) looked at the quality of documentation during child birth, which enabled the health workers in the district hospital who were dealing with the mothers directly before delivery to take notes of the PCV and parity of the mothers, while this study looked at the documentation in preterm babies brought to the special care baby unit.It is possible that some of the doctors in this study forgot the relationship between the mothers PCV, height, weight gain, occupation and parity with preterm delivery or they felt there was no need to document it because it should have been captured by the doctors in the obstetrics and gynaecology department.

The social history of mothers like smoking and alcohol intake which is an important risk factor to preterm delivery also had poor documentation with only 9% and 14% documentation respectively. The reason for this poor documentation could be because of lack of correlating the social history as an important risk factor for preterm delivery. This was similar to the study done by Soto et al (25), where the Paediatricians documentation on smoking was poor compared to the other medical interns. This could be because they are focused on babies born preterm and not on the mothers.

The least prognostic factors documented were the APGAR score and mode of delivery. The reason for the poor documentation of APGAR score and mode of delivery could be because the paediatric doctors are not always available for normal vaginal delivery of babies except in special cases when they are informed about a delivery by caeserean section. Although, the nurses and midwives in the labour ward score the APGAR, it is the duty of the admitting doctors in SCBU to document it during their clerking. In contrast to this study, the study done by Chaturvedi et al (22) showed that there was good documentation for mode of delivery with 98%. This could be because the study was done among health care workers in the labour ward.

Comparing the missing documentation between the inborn and out born SCBU showed that there was a significant difference in the documentation. There were more missing data on babys age in the inborn than the out born, a probable explanation could be because the babies in the inborn were delivered in the facility and where immediately brought to the inborn most of the doctors over looked the babies age at presentation, unlike the out born where the babies are delivered outside the hospital and may not present early. On the other hand, the missing data on birthweight was more in the out born than the inborn because not all the babies delivered outside came with a referral indicating the birthweight and some spent some days in some other facility or at home before presenting.

The category of data with the highest percentage of missing data was from the risk factors of preterm delivery with 82%, this was followed by the prognostic factors with 10% and the least was the demographic factors with 8%. The reason for the risk factors having the highest percentage of missing data could be because of the paucity of knowledge on risk factors for preterm delivery or lack of time for proper documentation.

V. Conclusion And Recommendation

The documentation on prematurity had some important missing data on the biodata, risk and prognostic factors. There will be need to carry out an interventional study on the use of a proforma on prematurity so as to see if this will improve documentation. Studies done by several authors like (Bhanot et al (6), Smallwood et al (20), Patel et al (21), Chow et al (3), and Cousins et al (26))all showed a remarkable improvement on documentation after the introduction of a proforma in both medical and surgical cases.

References

[1].   Thomas J. Medical records and issues in negligence. Indian J Urol. 2009; 25: 384–88
[2].   Physician connection. Why the Patients history is so important. PSIC 2011; 4 :2–5.
[3].   Chow J, Yvon C, Stanger T. How complete are our clerkings? A project aimed at improving the quality of medical records by using a standardised proforma. BMJ Quality Improvement Reports 2014; u203012.w1388 doi: 10.1136/bmjquality.u203012.w1388.
[4].   Tola K, Abebe H, Gebremariam Y, Jikamo B. Improving Completeness of Inpatient Medical Records in Menelik II Referral Hospital, Addis Ababa, Ethiopia. Advances in public health; 2017:1-5.
[5].   Zegers M, Bruijne MC De, Spreeuwenberg P, Wagner C, Groenewegen PP, Wal G Van Der. Quality of patient record keeping: an indicator of the quality of care? BMJ Qual Saf 2011; 20:314-18.
[6].   Bhanot K, Abdi J, Bamania P, Samuel M, Watfah J. Completeness in clerking: The surgical admissions proforma. Ann Med Surg 2017;19:1–6.
[7].   Keers RN, Williams SD, Cooke J, Ashcroft DM. Causes of medication administration errors in hospitals: a systematic review of quantitative and qualitative evidence. Drug Saf. 2013;36 :1045–67
[8].   Ross S, Ryan C, Duncan EM, Francis JJ, Johnston M, Ker JS, et al. Perceived causes of prescribing errors by junior doctors in hospital inpatients: a study from the PROTECT programme. BMJ Qual Saf. 2013;22 :97–102
[9].   Motamedi SM, Posadas-Calleja J, Straus S, Bates DW, Lorenzetti DL, Baylis B, et al. The efficacy of computer-enabled discharge communication interventions: a systematic review. BMJ Qual Saf. 2011;20: 403–15
[10].   Watkins T, Aguero S, Jaecks M. Impact of clinical decision support on time to order resolution for patients with documented allergies. Pharmacy (Basel). 2018;6: 80.
[11].   Foster S, Manser T. The effects of patient handoff characteristics on subsequent care: a systematic review and areas for future research. Acad Med. 2012;87: 1105–24.
[12].   Glen P, Earl N, Gooding F, Lucas E, Sangha N, Ramcharitar S. Simple interventions can greatly improve clinical documentation: a quality improvement project of record keeping on the surgical wards at a district general hospital. BMJ Quality Improvement Reports 2015; u208191.w3260 doi: 10.1136/bmjquality.u208191.w3260.
[13].   The General Medical Council. Good Medical Practice. 2013. paras 19-21e.
[14].   WHO, Medical Records Manual: A Guide For Developing Countries Revised and Updated, 2006
[15].   Ridyard E, Street E. Evaluating the Quality of Medical Documentation at a University Teaching Hospital. BMJ Quality Improvement Reports 2015; u208052.w3253 doi: 10.1136/bmjquality.u208052.w3253.
[16].   Schaeffer J. Poor Documentation: Why It Happens and How to Fix It. The Record 2016; 28:12-19
[17].   Lorenzetti DL, Quan H, Lucyk K, Cunningham C, Hennessy D, Jiang J, et al. Strategies for improving physician documentation in the emergency department : a systematic review. BMC Emergency Medicine2018;26: 1-12
[18].   Towers AL. Clinical Documentation Improvement—A Physician Perspective: Insider Tips for getting Physician Participation in CDI Programs.
[19].   Owen JM, Conway R, Silke B, Riordan DO. Medical Record Documentation among Interns: A Prospective Quality Improvement Study Medical Record Documentation among Interns: A Prospective Quality Improvement Study Medical Record Documentation among Interns: A Prospective Quality Improvement Study. 2010;12–3.
[20].   Smallwood AN, Russell AJ, C BRF, D AC, Smallwood N, Russell J, et al. Do medical admission pro formas improve the completeness of documentation? A multisite observational study processandsystems. 2018;5:121–5.
[21].   Patel S, Kingdom U. Improving documentation within the acute stroke unit: Introducing a stroke specific clerking proforma. BMJ Qual Improv Reports 2015;2–5.
[22].   Chaturvedi S, Randive B, Raven J, Diwan V, Costa A De. International Journal of Gynecology and Obstetrics Assessment of the quality of clinical documentation in India 's JSY cash transfer program for facility births in Madhya Pradesh. Int J Gynecol Obstet 2016;132:179–83.
[23].   Glazier RH, Elgar FJ, Goel V, Holzapfel S. stress, social support and emotional distress in a community sample of pregnant women. J Psychosom Obstet Gynaecol 2004;25: 247-55.
[24].   Abernethy AP, Herndon JE, Wheeler JL, Rowe K, Marcello J, Patwardhan M, Marcello J. Poor Documentation Prevents Adequate Assessment of Quality Metrics in Colorectal Cancer. J Oncol Practice 2009;5: 167-174
[25].   Soto CM, Kleinman KP, Simon SR. Quality and correlates of medical record documentation in the ambulatory care setting. BMC Health Ser Res 2002;7:1–7.
[26].   Cousins S. Checklist clerking document improves health promotion among medical admissions Post-Measurement. BMJ Quality Improvement Reports 2013; u202209.w1218 doi: 10.1136/bmjquality.u202209.w1218