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Completeness rate of paper-based psychiatric medical records: A retrospective assessment

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Abstract
Aim: To explore the completeness rate of paper-based psychiatric medical records (PMRs) and to investigate the factors effective on documentation status.
Material & Methods: The current study was a retrospective, descriptive study. The study was conducted in the Department of Psychiatry, MGM Medical College, Kishanganj, Bihar, India from April 2010 to April 2011. A checklist was developed based on the instructions of the Ministry of Health that were related to evaluate the completeness rate of documentation. The checklist covered all data elements in paper-based PMRs and comprised 10 sections according to PMR forms, including summary of admission and discharge, summary of psychiatric records, psychiatric history and assessment, progress note, consultation, physician orders, nursing report, vital signs control, laboratory tests, and electroencephalogram (EEG) report. Each section encompasses several data elements.
Results: Out of 53 items in PMR forms, the kappa value of 11 items was significant and in 8 items, the agreement was not significant. There was no documentation defect in 15.2% of PMRs. The range of completeness rate in paper-based PMR sheets was from 7.5% to 51.2%. "Admission and discharge" (49.4%), "nursing report" (47.7%), and "progress note" (*32*%) had the highest number of defects, respectively. "EEG report" (*n* = 4.57%), "laboratory tests report" (21.3%), and "vital sign" (*9.3*%) had the lowest number of documentation defects, respectively.
Conclusion: Based on our results, it is suggested to conduct regular evaluation and provide feedback to the health-care providers, and conduct training courses.

Keywords: documentation, medical records, problem oriented

Introduction

Medical records documentation is an important legal and professional requirement for all health professionals. Despite its importance, there has been little available research evaluating the whole standard of medical record documentation by health professionals [1]. Since medical records are the major source of health information, they are essential to maintain accurate, wide ranging and properly coded patient's data. They also include relevant facts, findings, and observations about a patient's health history including past and present illnesses, examinations, laboratory tests, treatments, and outcomes [2]. Medical records, manual or electronic, include information, which describes all aspects of patient's care. Physicians, nurses, and other healthcare providers need medical information for the patients' treatment. These information items mediate the relation between physicians, patients, and other healthcare providers [3]. The lack of correct and timely entry data can lead to poor choices in clinical practice, medication errors, inappropriate repeating of tests, unnecessary referrals, and the waste of time and other resources. So, it is imperative that all health professionals including nurses and midwives should understand the significance of the contents of the patient's medical records. They should know the potentiality of these documents which can be used in health care planning and quality health care management. Most important finding in previous study pointed that poor quality of the information present in patient records was associated with higher rates of adverse events, implying that the quality of the present patient information is a predictor of the quality of care [4-6]. Moreover, the communication and information deficit was also observed in previous study especially in areas such as medication reconciliation, pending test results, and adequate follow-up plans [7].

The current study aimed to explore the completeness rate of paper-based psychiatric records and to investigate effective factors on the documentation status in a large teaching hospital.

Material and Methods

The current study was a retrospective, descriptive study The study was conducted in the Department of Psychiatry, MGM Medical College, Kishanganj, Bihar, India from April 2010 to April 2011 A checklist was developed based on the instructions of the Ministry of Health that were related to evaluate the completeness rate of documentation. The checklist covered all data elements in paper-based PMRs and comprised 10 sections according to PMR forms, including summary of admission and discharge, summary of psychiatric records, psychiatric history and assessment, progress note, consultation, physician orders, nursing report, vital signs control, laboratory tests, and electroencephalogram (EEG) report. Each section encompasses several data elements. Verification of the content validity was carried out by an expert panel. The panel consisted of seven experts including medical informatics, a psychiatrist, and health information management. Expert validity was measured using a content validity index (CVI) and content validity ratio (CVR). The instrument was validated by an expert panel with

CVI 0.85 and CVR 0.86. The final version of the instrument encompassed 10 sections and 47 items on a two-scale range 0–1 (0: does not have documentation defect, 1: has documentation defect) [Table 1]. The samples were chosen completely at random. The entire of population paper-based PMRs were available for sampling. A list of the entire population was extracted from the hospital information system (HIS). Stratified random sampling was conducted based on the discharge month and clinical wards using a table of random numbers. The completeness rate of documentation for sampled paper-based PMRs was evaluated according to the checklist by three trained staff independently. An incomplete data element was considered as a "documentation defect" when at least two of the experts were in agreement. As mentioned before, the checklist had 10 sections according to PMR forms. The frequency of "documentation defects (incomplete data elements)" and "complete data elements" for each form was determined. All the completed checklists by the experts were recorded in an Excel file. The characteristics of psychiatric patients and the completeness rate of documentation in sampled paper-based PMRs were determined by descriptive statistics. Fleiss' Kappa agreement was computed to describe the level of data agreement among three PMR evaluators for each item of PMRs. The mean and standard deviation of kappa in each form were calculated. Effective factors on the completeness rate of documentation were assessed by Chi-square test. The relationships between the documentation status of each form as the dependent variable and "psychiatric wards characteristics," "discharge shift," and "discharge status" were investigated. Statistical significance for all the analyses was defined as $P \leq 0.05$.

Results

Among the patients, 43.4% (n = 152) were males and 56.6% (n = 198) were females. The referral type of most of the patients (85.1%) was "non-emergency." Only 14% of the patients were referred by emergency services. Majority of the patients (*28.9*%) were 31–40 years old. The next highest number of cases (n = 79, 21%) were 31–40 years old. Among cases, 78% of patients had been discharged with a doctor's order and 19% of them had been discharged against the physician's order [Table 2].

Kappa of Documentation Defects

The mean of kappa value in the summary of admission and discharge was almost perfect. Documentation defects in three forms included "consultation," "laboratory tests," and "vital signs control" was moderate. In "summary of psychiatric records," "psychiatric history and assessment," and "nursing reports," the mean of kappa value was fair. "Progress note" and "physician orders" had a slight mean kappa agreement value. "EEG report" was the only form that had poor mean kappa agreement. Table 3 shows the average agreement of completeness rate of documentation in PMRs. Out of 53 items in PMR forms, the kappa value of 11 items was significant and in 8 items, the agreement was not significant [Table 3].

Documentation Status of PMRs

Our results showed that in total, 81.28 of the PMRs had at least one documentation defect. There was no documentation defect in 15.2% of PMRs. The range of completeness rate in paper-based PMR sheets was from 7.5% to 51.2%. "Admission and discharge" (49.4%), "nursing report" (47.7%), and "progress note" (*32*%) had the highest number of defects, respectively. "EEG report" (n = 4.57%), "laboratory tests report" (21.3%), and "vital sign" (*9.3*%) had the lowest number of documentation defects, respectively. Table 4 shows the documentation status of PMRs [Table 4]. Patients' gender had a significant relationship with the completeness rate of documentation of "progress note" and "laboratory tests." There was no significant difference between the completeness rate of documentation and discharge shift, discharge month, and discharge status [Table 5].

Table 1: PMR evaluation checklist

PMR forms	Row	Items of PMR forms	Defect Status	
Summary of admission and discharge	1	Date and hour of discharge	Yes	No
	2	Patient hospitalization days	Yes	No
	3	Admission agent signature	Yes	No
	4	Number of consultations	Yes	No
	5	Date and time of patient transfer	Yes	No
	6	Attending physician signature	Yes	No
	7	Head nurse signature	Yes	No
	8	Date and time of patient transfer	Yes	No
	9	Primary and main diagnosis	Yes	No
Summary of psychiatric records (n=5)	10	Sociodemographic information	Yes	No
	11	Admission and discharge date	Yes	No
	12	Chief complaint/main findings/diagnosis	Yes	No
	13	Attending physician signature	Yes	No
	14	Laboratory and imaging tests	Yes	No
Psychiatric history and assessment (n=4)	15	Sociodemographic information	Yes	No
	16	Psychiatric history	Yes	No
	17	Resident signature	Yes	No
	18	Attending physician signature	Yes	No
	19	Psychiatric assessment	Yes	No
Progress note (n=4)	20	Sociodemographic information	Yes	No
	21	Daily progress of treatment	Yes	No
	22	Resident signature	Yes	No

	23	Attending physician signature	Yes	No
Consultation (*n*=7)	24	Sociodemographic information	Yes	No
	25	Date and hour of consultation request	Yes	No
	26	Primary diagnosis	Yes	No
	27	Consultation priority	Yes	No
	28	Consultation type	Yes	No
	29	Description of consultation request	Yes	No
	30	Description consultation response	Yes	No
Physician orders (*n*=6)	31	Sociodemographic information	Yes	No
	32	Date and hour of physician orders	Yes	No
	33	Physician orders	Yes	No
	34	Resident signature	Yes	No
	35	Nurse signature	Yes	No
	36	Attending physician signature	Yes	No
Nursing report (*n*=4)	37	Sociodemographic information	Yes	No
	38	Existence of nursing report in each shift	Yes	No
	39	Nurse signature	Yes	No
	40	Data and time of writing nursing report in each shift	Yes	No
Vital signs control (*n*=3)	41	Sociodemographic information	Yes	No
	42	Vital signs control in each shift	Yes	No
	43	Nurse signature	Yes	No
Laboratory tests (*n*=2)	44	Sociodemographic information	Yes	No
	45	Print of laboratory tests	Yes	No
EEG report (*n*=2)	46	Sociodemographic information	Yes	No
	47	Print of EEG	Yes	No

Table 2: Patients' characteristics

PMR characteristics	Subgroups	Frequency	%
Sex	Male	152	43.4
	Female	198	56.6
Age (years)	<20	29	8.29
	20-30	74	21.1
	31-40	101	28.9
	41-50	67	19.1
	>50	79	22.6
Type of referral	Nonemergency	298	85.1
	Emergency	52	14.9
Discharge status	Discharge with physician's order	273	78
	Discharge against physician's order	67	19.1
	Patient escape	3	0.86
	Death37	1	0.29
	Follow-up	6	1.71

Table 3: Kappa of completeness rate of documentation in PMRs (*n*=350)

PMR forms	Items of PMR forms	Agreement status	Kappa value	Standard error	Sig.
Summary of admission and discharge	Date and hour of discharge	Fair	0.230	0.050	0.000
	Patient hospitalization days	Fair	0.230	0.050	0
	Admission agent signature	Substantial	0.667	0.050	0
	Number of consultations	Slight	0.082	0.050	0.089
	Date and time of patient transfer	Poor	−0.01	0.050	0.629
	Attending physician signature	Moderate	0.427	0.050	0
	Head nurse signature	Poor	−0.001	0.050	0.908
	Date and time of patient transfer	Fair	0.481	0.050	0
	Primary and main diagnosis	Substantial	0.782	0.050	0
	Mean of total items	Almost perfect	0.328	SD = ±0.30	-
Summary of psychiatric record	Socio-demographic information	Slight	0.057	14:50.7	0.105
	Admission and discharge date	Substantial	0.681	14:50.7	0
	Chief complaint/main findings/diagnosis	Fair	0.391	14:50.7	0
	Attending physician signature	Moderate	0.40	0.050	0
	Laboratory and imaging tests	Moderate	0.40	0.050	0
	Mean of total items	Fair	0.372	SD = ±0.25	-
Psychiatric histor and assessment	Sociodemographic information	Slight	0.168	14:50.7	0.001
	Psychiatric history	Slight	0.139	14:50.7	0.006

form	Resident signature	Poor	−0.003	14:50.7	0.927
	Attending physician signature	Slight	0.073	14:50.7	0.127
	Psychiatric assessment	Poor	−0.008	0.050	0.877
	Mean of total items	Fair	0.073	SD = ±0.08	-
Progress note	Sociodemographic information	Slight	0.127	14:50.7	0.001
	Daily progress of treatment	Fair	0.228	14:50.7	0
	Resident signature	Fair	0.271	14:50.7	0
	Attending physician signature	Slight	0.172	0.050	0.001
	Mean of total items	Slight	0.212	SD = ±0.05	-
Consultation	Sociodemographic information	Slight	0.168	14:50.7	0.001
	Date and hour of consultation request	Moderate	0.543	14:50.7	0
	Primary diagnosis	Fair	0.327	14:50.7	0
	Consultation priority	Fair	0.228	14:50.7	0
	Consultation type	Substantial	0.625	14:50.7	0
	Description of consultation request	Substantial	0.799	0.050	0
	Description of consultation response	Slight	0.171	0.050	0.001
	Mean of total items	Moderate	0.402	SD = ±0.25	-
Physician orders	Sociodemographic information	Slight	0.138	14:50.7	0.03
	Date and hour of physician orders	Slight	0.078	14:50.7	0.149
	Physician orders	Slight	0.066	14:50.7	0.240
	Resident signature	Fair	0.329	14:50.7	0
	Nurse signature	Fair	0.238	0.050	0
	Attending physician signature	Slight	0.140	0.050	0.03
	Mean of total items	Slight	0.140	SD = ±0.10	-
Nursing report	Sociodemographic information	Slight	0.102	0.050	0.03
	Existence of nursing report in each shift	Slight	0.061	0.050	0.249
	Nurse signature	Moderate	0.538	0.050	0
	Data and time of writing nursing report in each shift	Substantial	0.79	0.050	0
	Mean of total items	Fair	0.376	SD = ±0.09	-
Vital signs contro	Sociodemographic information	Moderate	0.568	14:50.7	0
	Vital signs control in each shift	Moderate	0.568	14:50.7	0
	Nurse signature	Moderate	0.568	14:50.7	0
	Mean of total items	Moderate	0.568	SD = ±0.00	-
Laboratory tests	Sociodemographic information	Fair	0.220	0.50	0
	Print of Laboratory tests	Fair	0.220	0.50	0
	Mean of total items	Moderate	0.220	SD = ±0	-
EEG report	Sociodemographic information	Poor	−0.019	0.050	0.711
	Print of EEG	Poor	−0.019	0.050	0.711
	Mean of total items	Poor	−0.019	SD = ±0.50	-

Table 4: Completeness rate of documentation in PMRs (*n*=350)

PMR forms	Number of defects	Frequency	%
Summary of admission and discharge	0	177	50.6
	1	160	45.7
	≥ 2	13	3.71
Summary of psychiatric records	0	264	75.4
	1	43	12.3
	≥ 2	43	12.3
Psychiatric history and assessment form	0	242	69.1
	1	103	29.4
	≥ 2	5	1.43
Progress note	0	238	68
	1	91	26
	≥ 2	21	6
Consultation	0	223	63.7
	1	115	32.9
	≥ 2	12	3.43
Physician orders	0	286	81.7
	1	71	20.3
	≥ 2	2	0.57
Nursing report	0	183	52.3
	1	162	46.3
	≥ 2	5	1.43
Vital signs control	0	286	81.7
	1	0	0

	≥ 2	90	25.7
Laboratory tests	0	316	90.3
	1	34	9.71
	≥ 2	0	0
EEG report	0	334	95.4
	1	16	4.57
	≥ 2	0	0
Total PMRs	0	51	14.6
	1	33	9.43
	≥ 2	266	76

Table 5: Effective factors on PMRs' documentation status

PMR forms	Patients' gender	Patients' age	Educational status	Discharge shif	Discharge montl	Discharge statu
Summary of admission and discharge	0.001*	0.001*	0.249	0.372	0.659	0.459
Summary of psychiatric records	0.38	0.344	0.479	1	0.550	0.150
Psychiatric history and assessment	0.048	0.450	0.864	0.309	0.529	0.367
Progress note	0.129	0.059	0*	0.604	0.037	0.164
Consultation	0.858	0.001*	0.163	1	0.633	0.529
Physician orders	0.858	0.001*	0.163	1	0.633	0.529
Nursing report	0.858	0.001*	0.163	1	0.633	0.529
Vital signs control	0.858	0.001*	0.163	1	0.633	0.529
Laboratory tests	0.001*	0.001*	0.001*	1	0.249	0.459
EEG report	0.658	0.104	0.648	1	0.159	0.461
Total PMRs	0.360	0.895	0.052	1	0.329	0.333

Discussion

A comparative study done in Rwanda to assess the improvement in completeness of medical records in the maternity unit found that there was an improvement from 25% to 67% over a period of a year of a quality improvement strategy in the hospital [8]. Regarding the documentation completeness level at the nursing sheet, the present study shows that less than 50% of the study records were found to be completed. In a descriptive study aiming to assess the quality of medical records in a university hospital in Brazil in 2010, nursing documentation was found to be 82% complete [9]. Completeness of documenting the operation notes is very important for the total management of the patient's condition. For the present study, majority of the operation notes were poorly documented. High omission rate was also observed particularly the subjects like blood transfusion record in anemic case, Blood Pressure record for hypertensive case, blood sugar level for diabetic patient at day of discharge. Likewise electrolyte and blood count (platelets) etc. Records of inter departmental consultation, use of standardized medical abbreviations, whether case was admitted from emergency/ OPD, operative findings, Status during hospital admission/stay (any complication observed), time of follow up were frequently omitted in discharge summary. There is relatively high omission rate of the patients discharge condition. Ideally such information allows the sub-acute care team to understand the patients' health and functional status at the time of hospital discharge, enabling the team to better identify the worrisome about discharged patient. They otherwise do not know well. Lack of accuracy and continuity increases complication rate [10, 11]. The results of the study carried out by Pourasghar *et al*. [11] They observed an improved documentation quality in medical records using HIS.

Conclusion

Based on our results, it is suggested to conduct regular evaluation and provide feedback to the health-care providers, and conduct training courses.

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