The Role of Accreditation in Improving Documentation of Medical Records: A Case Study in Besat Hospital, Hamadan University of Medical Sciences- Iran

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Summary of relevance
Problem
Despite of the importance of medical records and their documentation, unfortunately, the documentation of medical records has no desirable quality.
What is already known about the topic
Physicians do not value the documentation of information about the care process, and do not consider the documentation of medical records as a part of care process and this is the most important reason for the incomplete medical records.
What this paper adds
The accreditation standards have a positive impact on the documentation status of medical records.

Abstract
Background: Medical records, as legal and professional documents, are valuable tools for accrediting hospitals; and all hospitals seek to identify factors that contribute to the improvement of these records by taking into account accreditation standards.

Aim: This study aimed to investigate the role of accreditation of health centers in improving the documentation status of records of patients admitted to Besat Hospital affiliated to Hamadan University of Medical Sciences.

Methodology: The present analytical and cross-sectional research was conducted in 2018 on records of admitted patients during 2011 and 2017. To this end, the research investigated 1500 records (700 medical record from the second half of 2011 and 800 medical records from the second half of 2017). A researcher-made checklist was used to collect data that was analyzed by SPSS V.22.

Findings: All selected forms had a relative improvement after the accreditation of documentation status (P<0.001). The highest score of documentation belonged to the admission and discharge summary from. The lowest score of documentation belonged to the progress notes sheet (24.61%) before the accreditation, and the clinical form header (52.92%) after accreditation. Furthermore, the unit summary sheet had the greatest change (40.5%) and the admission and discharge summary sheet had the lowest change (5.34%).

Conclusion: In general, accreditation standards had a positive impact on the documentation status of medical records; however, monitoring the implementation of standards and their achievement certainly depended on executive, organizational, human, and cultural factors. Therefore, hospitals should pay special attention to these factors and implement guidelines for documentation of medical records.

Key words:
Medical record; Documentation; Accreditation; Accreditation Standards; Hospitals

1. Introduction

Patient medical records, as documents, are written texts that are used in health centers for litigation and defense. Documentation of medical records is an important legal and professional requirement for all health professionals because a proper documentation facilitates the exchange of patient information for all members of a treatment team, and provides the infrastructure for qualitative assessment and medical and legal research by guarantee of all provided care for patients(Farhan, Al-Jummaa, Alrajhi, Al-Rayes, & Al-Nasser, 2005; Phillips, Stiller, & Williams, 2006). On the other hand, ensuring the provision of high quality, safe and effective services in health centers is a goal that can be achieved by extensive planning and effort. The design and implementation of a suitable method for accurate assessment of quality of provided services for patients is feasible through the assessment of medical records; and results of this assessment play roles as a valuable tool for providing high quality care, ensuring patient safety, and improving the patient health(Kabir, 2018).

The quality of medical records in terms of research, scientific and statistical information is precisely dependent on the quality of their content that is recorded by documenters. This quality is often expressed in terms of relevancy, completeness, accessibility, timeliness, and legibility (EK, 1999; Manna & William, 2003), and makes the medical record as a valuable tool for evaluation of health-care interventions. Since the patient and hospital satisfaction, reimbursement and patient care services are directly related to the proper medical documentation, there is a need for improved quality of contained information in medical records for providing medical and financial services in hospitals (Karami & Shokrizadeh Arani, 2010; Micheletti & Shlala, 2006).

Despite the importance of medical records and their quality documentation, unfortunately, conducted studies indicate that the documentation of medical records has no desirable quality in Iran(Karami & Shokrizadeh Arani, 2010; Saravi et al., 2016; Tara & Etminani, 2017). The most important reason for the incomplete medical records is that physicians and surgeons do not value the documentation of data and information about the care process, and do not consider the documentation of medical records as a part of care process as much as they belief that the high-quality care is critical for the patient. Furthermore, medical records are completed by medical students without any supervision in many educational hospitals leading to the inefficient documentation process(Tavakoli, Saqayyan-nezhad, Rezayatmandi, Moshaveri, & Ghaderi, 2006). On the other hand, some studies indicate that the accreditation of hospitals can play an important role in documenting medical records(Karami & Shokrizadeh Arani, 2010; Nomura, Silva, & Almeida, 2016; Phillips et al., 2006; Tabrizi & Gharibi, 2011). Amerion et al. (2011) indicated that registering Unit Number on laboratory samples and physician signature in the laboratory report sheets were one of the most important defects in the patient's medical records and the main reason was the lack of guidelines and standards for documentation(Amerioun, Sh, Mahdavi, Mamaghani, & Meskarpour Amiri, 2011). Philips et al. (2006) found that accreditation standards have all necessary guidelines for documentation of medical records, and the application of these standards is important in recording early diagnoses and improving the quality of patient care (Phillips et al., 2006).

Hospital accreditation is a reliable quality and safety-based assessment model that is widely used worldwide for evaluation of healthcare services due to its importance, efficiency and key role in improving the quality of health services. This model was established in 2011 with the aim to improve and standardize hospital activities from a variety of aspects based on the documentation of activities and an annual, outsourced, and largely voluntary assessment in Iran. This standard is compulsory and non-voluntary in Iran, and the failure to obtain acceptable rates by hospitals reduces insurance coverage and leads to cancellation of their licenses in the worst cases (Bahadori, Ravangard, & Alimohammadzadeh, 2015). According to the above cases, all health centers and especially hospitals are seeking to identify factors affecting the quality of documentation in order to improve the quality of health care considering standards of accreditation (Ekici, 2013). The present study aimed to investigate the impact of applying accreditation standards of health centers on improving the documentation of records of patients admitted to Besat Hospital affiliated to Hamadan University of Medical Sciences.

2. Methods

2.1. Research approach

The present analytical cross-sectional study was conducted in 2018 on records of patients admitted in the second half of 2011 and 2017.

2.2. Setting

Besat Hospital affiliated to Hamadan University of Medical Sciences.

2.3. Sample

Sample was the inpatient medical records of Besat Hamadan Hospital in 2011 and 2017.

2.4. Sample size

Sample size was 1500 medical records (700 records of the second half of 2011 (before accreditation) and 800 records from the second half of 2017 (after accreditation)).

2.5. Sampling Technique

In order to determine the sample size, according to the literature review, the medical records documentation for 2011 and 2017 was 50% and 73% (P1 and P2) completed respectively on average. Accordingly, the necessary sample size was calculated considering the first type error of 0.05, the second type error of 0.10 (test power of 0.90), the accuracy of 0.05, and taking into account two populations and the difference in population size (Kimiafar, Vafaee Najar, & Sarbaz, 2015; Saravi et al., 2016). A systematic sampling method was used to select records.

$$\varphi = \frac{N(1396)}{N(1390)} = 1.15$$

$$\bar{P} = \frac{(P_1 + \varphi P_2)}{1 + \varphi} = 0.62$$

$$\bar{q} = 1 - \bar{p} = 0.38$$

$$d = 0.05$$

$$m = \frac{(Z_{1-\frac{a}{2}} \times \sqrt{(1+\varphi) \times \overline{pq}} + z_{1-\beta} + \sqrt{\varphi p1q1 + p2q2})^2}{\varphi d^2}$$

$$= 652 \cong 700$$

$$n = \varphi m = 1.15 \times 652 \cong 800$$

2.6. Data collection methods

Data collection tool included a researcher-made checklist based on the informing elements (IE) of standard forms of hospital (Admission and Discharge Summary sheet with 41 items, Unit Summary Sheet with 20 items, Medical History & Physical Examination Sheet with 17 items, Progress Notes Sheet with 9 items, and Headers of Clinical Sheets with 7 items). Checklists were completed by Health Information Technology experts. To determine the reliability of tool, a checklist expert completed 50 records (20 records of 2011 and 30 records of 2017), and then another checklist expert was asked to re-assess records to determine the minimum necessary correlation. To determine the validity of data collection tool, the checklist was given to Health Information Technology experts and the content validity of its items was confirmed based on Waltz and Bausell index (CVI> 0.79)(Kimiafar et al., 2015) .

2.7. Data analysis

The checklist was designed on the 3-point Likert scale (not completed, incomplete, and completed) and scored from 0 to 2. In each examined form, the complete informing elements were scored 2, the empty informing elements were scored zero, and informing elements with illegible content or striking out were scored 1. The examined forms were divided into three groups namely "good", "moderate" and "weak". A form with score of 95%-100% was put in the "good" group, a form with score of 75%-95% of was put in "moderate" group, and a form with score of less than 75% was put in "weak" group. Data analysis was done using SPSS V.22 and descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics (Paired t-test) at a significant level of 0.05.

3. Result

The research findings indicated that significant difference between the rate of documentation of all selected forms and completing headers of clinical forms in the second half of 2011 and 2017 (P<0.001). The highest score of documentation belonged to the Admission and Discharge Summary Sheet. The lowest score of documentation belonged to the Progress Notes Sheet before accreditation (24.61%) and the Clinical Form headers after accreditation (52.92%). Furthermore, the Unit Summary Sheet had the highest change (40.5%) and the Admission and Discharge Summary Sheet had the lowest change (5.34%). (Table 1)

Table 1: Documentation Status of the Selected Forms (2011,2017)

STATUS FORMS	Before Accreditation (2011)				After Accreditation (2017)				Effect Size	P Value Score
	Comp.* NO.(IE) (%)	In Comp. NO.(IE) (%)	Not Comp. NO.(IE) (%)	AVG** Score (%)	Comp. NO(IE) (%)	In Comp. NO.(IE) (%)	Not Comp. NO.(IE) (%)	AVG Score (%)		
USS (20 IE)	7998 (35.70)	0 (0.00)	9002 (64.30)	14.28 (35.70)	1525 (76.20)	0 (0.00)	475 (23.75)	30.48 (76.20)	16.2 (40.5)	0.001
MHPES (17 IE)	629 (37.00)	63 (0.53)	7434 (62.47)	12.67 (37.26)	8928 (65.65)	0 (0.00)	4672 (34.35	22.32 (65.65)	9.65 (28.39)	0.001
PNS (9IE)	1547 (24.56)	1 (0.11)	4746 (75.33)	4.43 (24.61)	4384 (60.89)	0 (0.00)	2819 (39.11)	10.96 (60.89)	6.53 (36.28)	0.001
ADSS (41 IE)	23394 (81.50)	1295 (4.50)	4011 (14.00)	68.69 (83.77)	28976 (88.34)	504 (1.54)	3320 (10.12)	73.07 (89.11)	4.38 (5.34)	0.001
HCS (7 IE)	434 (8.85)	3654 (74.57)	812 (16.57)	6.46 (46.14)	294 (6.00)	4599 (93.86)	7 (0.14)	7.41 (52.92)	0.95 (6.78)	0.001

*Completed, **Average

The research results indicated that medical records of patients before accreditation (2.29%, 47.8%, 50.43%) and after accreditation (23.7%,70.10%, 6.83%) were put in the "good", "moderate" and "weak" groups respectively. (Table 2)

Table 2: The Average Percentage of Documentation Scores in Three Group "Good, Medium, Poor" (2011, 2017)

STATUS / FORMS	Before Accreditation (2011)			Before Accreditation (2017)		
	Good (%)	Medium (%)	Poor (%)	Good (%)	Medium (%)	Poor (%)
USS (20 IE)	2	22	76	1	79	20
MHPES (17 IE)	3	11	86	4	57	39
PNS (9IE)	3	8	88	34	16	50
ADSS (41 IE)	2	91	7	5	95	0
HCS (7 IE)	2	1	97	6	0	93
MEAN	2.29	47.28	50.43	6.83	70.10	23.07

Furthermore, the research results indicated that the documentation of information elements of consent forms, managerial reports and expenses were more taken into consideration before accreditation (99.5%) and after accreditation (100%). Patient treatment process and history of patient diseases before accreditation (36.2%) and after accreditation (56.63%) were less taken into account by documenters. (Table 3)

Table 3: The average percentage of documentation scores in categorized information elements in the Besat Hospital, Hamadan University of Medical Sciences(2011, 2017)

GROUP DATA CLASSIFIED / FORMS	BEFORE ACCREDITATION (2011)										AFTER ACCREDITATION (2017)									
	Demographic	Diagnostic	Unit & Doctor Name	Admit Discharge	Case management	Verifications	Permissions letters	Progress note	History	Total	Demographic	Diagnostic	Unit & Doctor Name	Admit Discharge	Case	Verifications	Permissions Letters	Progress note	History	Total
USS	21.37	43.8	47	45.5	-	48	-	-	-	35.70	49.88	91.4	95	95	--	97	-	-	-	76.20
MHPES	30.63	49	36.5	46	-	54	-	-	36.2	37.26	66.25	82	77	79	-	83	-	-	56.63	65.65
PNS	16.75	-	20.5	37.5	-	38	-	38	-	24.61	50.75	-	61.5	74	-	74	-	74	-	60.89
ADSS	88.13	85.35	100	31.20	99.5	79.5	99.5	-	-	83.77	90.47	92.07	100	37.04	100	95	100	-	-	89.11
HCS	42.5	-	44	47.5	-	-	-	-	-	46.14	52.9	-	53	53	-	-	-	-	-	52.92
MEAN	39.88	59.38	49.6	41.54	99.5	54.88	99.5	38	36.2	45.50	62.05	88.49	77.3	67.61	100	87.25	100	74	56.63	68.95

4. Discussion

The present study indicated that the accreditation of hospitals had a positive effect on their documentation rate. The amounts of documentation of all selected forms and header of clinical forms in the second half of 2011 were significantly different from 2017 (P <0.001). Before applying accreditation standards (2011), the highest score of documentation belonged to the Admission and Discharge Summary Sheet (83.77%), and the lowest score belonged to sheet of progress notes (24.61%). After implementation of accreditation standards, the Admission and Discharge Summary Sheet (89.11%) and headers of clinical forms (52.92%) had the highest and lowest scores. Moreover, the unit summary sheet had the highest change (40.5%) and the admission and discharge summary had the lowest change (5.34%). Behera et al. (2017) studied the impact of accreditation on the quality of reports and echocardiographic charts at the California Medical Center and Lucile Packard Children's Hospital. In their study, the California Medical Center's echocardiograms were selected from 2009-2012 (before the accreditation); and echocardiograms of Lucile Packard Children's Hospital were selected from 2013-2015 (after the accreditation). The research results indicated a significant difference in the quality of images and errors in echocardiograms (From a total of 52 echocardiograms, 17.3% were unavoidable, 48.1% were almost avoidable and 34.6% were avoidable) (P= 0.12), while the amounts of documentation of echocardiographic reports were significantly different in both centers (187 versus 295.5 with P<0.001)(Behera, Smith, & Tacy, 2017).Based on the grouping (good, moderate, weak), most of studied sheets were had weak levels (50.43%) before accreditation and moderate (70.10%) after accreditation; and 23.07% were in the "weak" group after accreditation indicating the desired gap between the quality of documentation of medical records. Saravi et al. (2016), in a study titled "Documentation of

medical records at hospitals of Mazandaran University of Medical Sciences in 2014: A quantitative study", the mean percentage of recording information elements in four sheets of Admission and Discharge Sheet, Unit Summary Sheet, Medical History & Physical Examination Sheet and Progress Notes Sheet estimated at the week level (60%) (Saravi et al., 2016). In a study titled "Evaluation of Randomly Selected Completed Medical Records Sheets in Teaching Hospitals of Jahrom University of Medical Sciences", Mahjoub et al. found that the completion levels of examined sheets by documenters in studied hospitals were not optimal, and the mean percentages of recording the identity data of medical history, physician orders and surgical reports were 32.9%, 35.8% and 40.2%, respectively, and at the weak levels (Mahjob, Farahabadi, & Dalir, 2011). According to findings of the present study, it can be concluded that the process of documenting medical records is improving due to the policies by Iran Ministry of Health and Medical Education (MOHME).

The research results also indicated that the documentation of informing elements of consent forms, managerial reports and expenses were more taken into account before (99.5%) and after (100%) the accreditation. The patient treatment process and records of patient records before accreditation (36.2%) and after accreditation (56.63%) were less taken into account by documenters. It should be noted that documenters of medical records paid more attention to financial dimension of medical records, but paid less attention to documentation of the treatment process. In this regard, Mahjoub et al. reported a mean data record of medical history (38%), surgery report sheet (94.8%), and physician order sheet (99.3%)(Mahjob et al., 2011).

There was a significant difference in the average documentation of medical diagnoses in 2011 (59.38%) with 2017 (88.49%). In a study titled "the Process of Documenting Medical Records by Physicians at Hospital of Ardabil Universities of Medical Sciences", Mashoufi et al. argued that 71.9% of cases were recorded with early diagnosis, 58.9% with diagnosis during treatment, 60.8% with final diagnosis and 52% with therapeutic and surgical procedures in studied files. Despite the fact that at least 12.7% of patients were hospitalized due to accidents, injuries and poisonings, only 8.5% of cases were recorded with the accident. 68% of cases had no recorded situation during the discharge, and 76.3% had no recorded post-discharge recommendations. Considering that only 3.5% of cases were related to dead patients, only 31% of cases were with recorded main cause and 8% with underlying causes of death. The correct principles of diagnosis by physicians were not observed in 52.4% of cases (Mashoufi, Rostami, & Mardi, 2006).

Accreditation standards in the documentation of medical records are important factors that have a significant impact on the quality of medical record documentation, but it seems that monitoring the implementation of these standards seems to be more effective. The present study indicated that accreditation standards of hospitals as a systematic and purposive monitoring tools can be effective in improving the documentation of medical records in hospitals. According to findings of the present study, the improvement of documentation quality in all selected forms is from a weak level before accreditation to the moderate level after accreditation. This improvement can be influenced by various factors such as standards and the way of performing the accreditation process. In a research titled "Factors Affecting the Quality of Documentation of Medical records: Solutions for Managers and Physicians in Hospitals Affiliated to Kashan University of Medical Sciences", Karami et al. mentioned procedures and standards with a score of 88.5%, and monitoring, follow-up and its implementation with a score of 90.1% as important factors in improving the documentation of medical records(Karami & Shokrizadeh Arani, 2010). According to Philips et al. (2006), despite the fact that documentation standards and guidelines have all necessary guidelines for documentation of medical records and the use of these standards plays an important role in recording early diagnosis and improving the quality of patient care, the documentation of medical records can be only improved through regular inspections and monitoring(Phillips et al., 2006), and this improvement is in the interest of all members of the health care team and patients. In a study titled " DESIGNING A NEW PARADIGM FOR EVALUATING IRANIAN MEDICAL RECORD DEPARTMENTS", Safdari et al. (2007) argued that the weakness in the documentation of medical records indicated the poor performance and diversion of medical record sectors from standards. This functional deviation from standards of the Ministry of Health in Iran can be attributed to the inconsistency of standards with existing problems and the lack of adequate enforcement of these standards is in the health care centers(SAFDARI, Meydani, Hajavi, GHAZI, & Sharifian, 2007). Therefore, monitoring and accreditation of treatment centers and explicit expression of expectations can have very beneficial effects on improvement of service quality for patients and their timely, legible and accurate documentation for achievement of educational and research purposes.

5. Conclusion

The patient medical record is an important source of information for patient care and treatment processes. This source also has a potential for medical education and research. It is essential to apply accreditation standards in the field of documentation to have complete medical records. However, monitoring the implementation of standards and their fulfillment depend on a great number of factors such as executive, organizational, human and

cultural factors that should take into account by health centers. According to findings of the present study, the status and extent of documentation of medical records were different, but the rate of completion of forms in the hospital was unfavorable and even weak and incomplete in some cases. In the present study, despite the application of hospital accreditation standards, documentation of records was not at the desirable level, and the deficiencies might occur for various reasons such as neglect and inattention to the completion of medical records by documentaries, lack of attention to accreditation standards and the implementation of their process, the lack of proper training in the field of completing medical records, the high volume of documentation work and, consequently, the lack of sufficient opportunity for documentation.

Conflict of interest: None Declared.

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