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ORIGINAL

Assessment of communication to improve health care quality in pediatrics: a descriptive study

Avaliação da comunicação para melhoria da qualidade da assistência à saúde em pediatria: estudo descritivo

Evaluación de la comunicación para mejorar la calidad de la atención en salud en pediatría: estudio descriptivo

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ABSTRACT

Objective: to assess the quality of the written communication of the multiprofessional team in a Unit for Mechanical Ventilation Dependents at a public pediatric hospital. **Methods:** a quantitative and descriptive research study conducted at a Public Pediatric Hospital, in four stages, namely: identification and prioritization of a quality problem; analysis of the causes of the problem; development of criteria to evaluate the quality level; and assessment of the quality level. **Results:** 75.0% of the cases of criterion non-compliance are related to date and time recording and to use of electronic medical charts by nurses, physicians and nursing technicians. Physiotherapists presented 32.3% non-compliance in identification of the professionals; among the physicians, the percentage was 8.3%; in the nurses, 68.3%; and in the nursing technicians, 86.7%. **Conclusions:** absence of date and time in the physicians' and Nursing records was observed, as well as low adherence by the physicians to night evolution in electronic medical charts, and limited access and use of this system by the Nursing team.

Keywords: Pediatrics; Communication; Medical Charts; Health Care Quality; Patient Safety.

RESUMO

Objetivo: avaliar a qualidade da comunicação escrita da equipe multiprofissional em uma Unidade de Dependentes de Ventilação Mecânica de um hospital público pediátrico. **Métodos:** pesquisa descritiva quantitativa, num Hospital Público Pediátrico, em quatro etapas: identificação e priorização de um problema de qualidade; análise das causas do problema; desenvolvimento de critérios para avaliar o nível de qualidade; avaliação do nível de qualidade. **Resultados:** 75,0% dos não cumprimentos de critérios são sobre registro da data e hora e a utilização do prontuário eletrônico pelos enfermeiros, médicos e técnicos de enfermagem. Os fisioterapeutas apresentaram 32,3% de descumprimento na identificação dos profissionais, os médicos tiveram 8,3%, os enfermeiros 68,3% e os técnicos de enfermagem 86,7%. **Conclusões:** foi observado ausência da data e hora nos registros dos médicos e da enfermagem, baixa adesão dos médicos na evolução noturna no prontuário eletrônico, e limitação no acesso e utilização desse sistema pela equipe de enfermagem.

Descritores: Pediatria; Comunicação; Prontuários; Qualidade da Assistência à Saúde; Segurança do Paciente.

RESUMEN

Objetivo: evaluar la calidad de la comunicación escrita del equipo multidisciplinario en una Unidad de Ventilación Mecánica de un hospital pediátrico público. **Método:** investigación descriptiva cuantitativa realizada en un Hospital Pediátrico Público en cuatro etapas: identificación y priorización de un problema de calidad; análisis de las causas del problema; desarrollo de criterios para evaluar el nivel de calidad; evaluación del nivel de calidad. **Resultados:** el 75,0% de los incumplimientos de los criterios están relacionados con el registro de fecha y hora y el uso de la historia clínica electrónica que hacen los enfermeros, médicos y técnicos en enfermería. Los fisioterapeutas presentaron un 32,3% de incumplimiento en la identificación de los profesionales, los médicos un 8,3%, los enfermeros un 68,3% y los técnicos en enfermería un 86,7%. **Conclusión:** se observó que faltaba la fecha y hora en los registros que realizaron los médicos y enfermeros, baja adherencia de los médicos en la evolución nocturna de la historia clínica electrónica y limitado acceso y uso de este sistema por parte del equipo de enfermería.

Descriptores: Pediatría; Comunicación; Historia Clínica; Calidad de la Atención en Salud; Seguridad del Paciente.

INTRODUCTION

Failures in communication processes represent the human factor associated with the higher number of harms in the health services. As a complex process that involves several components and various assistance teams, failure in the communication process is related to verbal prescriptions or orders. A number of studies show that 39% of the adverse drug reactions are due to prescription errors[1].

The improvement of effective communication, proposed as the second international goal for Patient Safety (PS), is the only one among the six goals that still does not have a national protocol available to guide the health services, which turns it into an even greater challenge to be worked on[1].

Corroborating this issue, between 2014 and 2015, a study analyzed adverse events at a pediatric health service in Mexico, identifying lack of communication between health professionals as one of the main factors triggering these events[2]. In addition to that, we can mention a research study conducted in an obstetric center from southern Brazil that analyzed the PS culture, with communication as the main weakness, reasserting the importance of correct records for safe care[3].

A literature review that signals the diverse evidence on safe care for pediatric patients reports that quality of the professionals' records in the patients' electronic medical charts and failures in effective professional-patient--family communication are contributing factors in most of the incidents. Consequently, strengthening and assessing communication between the team members contributes benefits for safe care[4].

This, in turn, enables unified recording by the professionals about the patients; therefore, written communication is an important tool for the prevention of incidents[5]. Given the above, it is reiterated that written communication in neonatal and pediatric units becomes fundamental due to the complexity inherent to the care provided to these patients, even more when this population segment presents Complex Chronic Conditions (CCCs)[4,6].

In this sense, the search for improvement in quality of the health services, allied to technological and scientific advances, promotes aid tools for PS in pediatric and neonatal care[4]. In this perspective, the team's efficient communication optimizes care with the transition of these patients from the hospital to the home environment, as multiprofessional evaluation of the cases allows seeing the right moment for safe hospital discharge of chronic patients, reducing occupation of critical beds and enhancing the patients' comfort and the relationships between parents and children[6].

There has also been a change in the epidemiological scenario of pediatric care in Brazil, with the presence of a number of CCCs affecting children hospitalized in Intensive Care Units (ICUs) and pediatric wards[6]. However, in Rio Grande do Norte, it has been noticed that these pediatric patients with CCCs still face significant difficulties achieving transitional care from the hospital to the home environment[5].

Integration of all these factors becomes necessary to align the course of action in this population segment. The multiprofessional team's written communication is fundamental for planning the necessary care measures for dehospitalization and for reducing the risks of incidents in these patients with CCCs, considering the long hospitalization times and the patients' own clinical conditions[7].

Thus, there is a need to conduct a study to know compliance of a "mixed" (half electronic and half handwritten) medical chart with respect to PS compliance. In this sense, it is important to know the quality of this medical chart, considering that the aforementioned criteria are relevant for continuity of the care provided, for the prevention of adverse events, and for the promotion of PS. For the professionals, medical charts have an ethical and legal character as a record of the work performed and, for the institution, a financial character, in view of the costs demanded for their maintenance.

In addition to that, the analysis performed in this study can also be used to guide the implementation of improvement interventions, according to the results that are observed. Finally, this study aims at assessing the written communication of the multiprofessional team in the Unit for Mechanical Ventilation Dependents (*Unidade de Dependentes de Ventilação Mecânica*, UDVM) at a pediatric hospital.

METHOD

Study design, period and locus

This is a quantitative, cross-sectional and des-

criptive research study conducted between December 2018 and February 2021 according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) tool, in the UDVM of a pediatric hospital from Natal, Rio Grande do Norte, Brazil.

Population and sample, inclusion and exclusion criteria

The study sample consisted in the records made in the medical charts of six patients aged between one and 14 years old. These records were analyzed during a hospitalization period common to all the subjects. The inclusion criterion corresponded to medical charts of users who were hospitalized in the UDVM, and the exclusion criterion was evolution to death.

Study protocol

The study was developed in four stages: 1) Identification and prioritization of a quality problem; 2) Analysis of the causes of the problem; 3º) Development of criteria to evaluate the quality level; and 4º) Assessment of the quality level.

1st Stage: Identification and prioritization of a quality problem, by means of the Nominal Group and Periodization Matrix techniques. Two meetings were held in December 2018 with five professionals working in the UDVM. The participants were randomly selected, based on who was present and accepted to participate. Thus, the situation chosen by the group was communication of the multiprofessional team, considering that, by working on it, it would be possible to cover the teamwork limitations, one of the main barriers in assistance. In addition to that, it becomes an initiative to improve other problems, such as those related to ventilatory assistance to acutely-ill patients.

2nd Stage: Analysis of the causes of the problem - To analyze the problem, a Cause and Effect Diagram was elaborated, and the causes were analyzed with the assistance team (one nurse, one physiotherapist, one physician and two nursing technicians) of the UDVM in 2019. The absence of a single medical chart, even with the use of electronic records, proved to be a cause and effect factor for care fragmentation and for the difficulty of collective work.

3rd Stage: Development of criteria to evaluate the quality level - Assessment of the written communication took place through the literature review with similar objectives, seeking to assess objectivity and clarity of the records, as well as compliance with minimum ethical requirements, namely: recording date and time before any note/evolution in the medical chart[8-9]; adequate professional identification in each record[8-10]; adherence to electronic prescription of medications, evaluating essential points for PS, such as use of abbreviations, generic names and presence of decimals and zeros[11]; and adherence to the use of electronic medical charts[11].

Thus, four criteria were created, three of which were stratified among the Nurse, Physiotherapist, Physician and Nursing Technician categories, as shown in Figure 1. Choice of these professionals is due to the minimum team that provides care to the patients hospitalized in the sector. The fourth criterion is also stratified, although into important components to assess quality of the medical prescription. Consequently, we obtain four criteria stratified into four subcriteria, totaling 16 criteria.

4th Stage: Assessment of the quality level – The assessment of communication took place in January 2021, with the analysis of the medical charts referring to the June 2020 hospitalization period, in a random selection from the hospital's medical chart archive sector. To this end, by applying the eligibility criteria, a total of six medical charts met the inclusion and exclusion criteria.

Analysis of the results and statistics

The unit of analysis adopted was the number of hospitalization days per user and, for all six patients, a matching recording time period in all eligible medical charts was evaluated, as each patient had different hospitalization times. Thus, the first 10 hospitalization days were considered to analyze compliance with the study criteria. A total of 300 records were then investigated in the medical charts: 60 nurse evolutions, 60 physiotherapist evolutions, 60 medical evolutions, 60 nursing technician notes, and 60 drug prescriptions. The data will be presented by means of descriptive statistics (Table 1) and through a Pareto Chart.

Ethical aspects:

The study was evaluated and approved by the Research Ethics Committee of the Onofre Lopes University Hospital (*Hospital Universitário Onofre Lopes*, HUOL). CAAE: 19679119.0.0000.5292.

CRITERION	EXCEPTION	CLARIFICATION
1. Date and time in all the records made in the patient's medical chart.	Even with automated recording, the professionals can record the time when a given complication arose, for example.	Resolution No. 1,638/2002 of Federal Council of Medicine (Conselho Federal de Medicina, CFM) determines that all records in the patient's medical chart must contain date and time(8). The Recommendations Guide about Nursing records reasserts the CFM guidance(9). Only records that contain date and time will be considered as compliant, for all shifts.
1.1 By the physician.		
1.2 By the physiotherapist.		
1.3 By the nurse.		
1.4 By the nursing technician.		
2. Identification of the record made with the professional's signature and stamp with legible name and registration number in the respective professional council.		Ethically, all professional councils require proper identification in the records of the patients' medical charts (Resolutions: CFM No. 2,217/2018(8); Federal Council of Nursing No. 514/2016(9); Federal Council of Physical and Occupational Therapy No. 414/2012(10)). Only records with a signature and stamp will be considered as compliant, for all shifts.
2.1 By the physician.		
2.2 By the physiotherapist.		
2.3 By the nurse.		
2.4 By the nursing technician.		
3. Drug prescriptions in electronic medical charts.	Except for drug prescriptions in urgencies and emergencies, which can be handwritten.	Prescriptions in electronic medical charts ensure legibility of the text, and standardization of prescriptions facilitates interpretation by the team to dispense, prepare and administer the medications(11).
3.1 Prescriptions without non-standardized abbreviations and symbols.	The administration routes and the decimal units are standardized.	Using standardized abbreviations and symbols reduces the risks of failures in the medication process(11).
3.2 Prescriptions with indication of the doses and use of decimals and zeros.		Pediatric patients require medication doses proportional to their weight and age; therefore, the doses must clearly contain decimals and zeros to avoid medication errors(11).
3.3 Prescriptions with generic denomination of the medications.		The medications prescribed in the hospital are standardized in the electronic medical chart system. Consequently, there is a standard in communication, thus minimizing the risks of medication errors.
4. Evolution in the electronic medical chart, in the day and night shifts.		As the service has both electronic and handwritten medical charts, the objective is to learn how these records are kept in two modalities. Only if the evolution is included in the electronic medical chart in all the shifts analyzed will it be considered as compliant.
4.1 By the physician.		In the day and night shifts.
4.2 By the physiotherapist.		In the morning and afternoon shifts.
4.3 By the nurse.		In the day and night shifts.
4.4 By the nursing technician		In the morning, afternoon and night shifts.

Figure 1 - Criteria to assess quality of the written communication at the UDVM of HPMAF. Natal, RN, Brazil, 2021
Source: Prepared by the authors, 2021.

RESULTS

The research data are organized based on compliance with the criteria in the sample of 60 hospitalization days of the six patients in the UDVM, and the frequencies of these compliance cases are shown in Figure 2.

The data on the cases of non-compliance with the criteria analyzed in the medical charts were also arranged in a Pareto Chart (Figure 2), after calculation of their relative, absolute and cumulative frequencies. With this chart there is more clarity about the criteria in which there is a higher concentration of non-compliant cases and, consequently, those that need interventions, thus being considered as "few vitals". The criteria are represented by the letter C (criterion), by the numbers referring to the content of the criterion (1 - date and time record, 2 - professional identification in the record, 3 - medical prescription, 4 - adherence to the electronic medical chart), by the initials of the professionals according to the stratified criteria (N – Nurse, PT – Physiotherapist, P – Physician, NT – Nursing Technician). In Chart 2, 75.0% non-compliance is noticed in six criteria stratified by the professional categories, corresponding to two general criteria. These criteria considered as "few vitals" concentrate most of the problems presented in the sample. Half of the "few vitals" are related to Criterion 1 - "Date and time in all records made in the patients' medical charts" by professional nurses, physicians and nursing technicians. The other half is related to Criterion 4 – "Evolution in electronic medical charts, in the day and night shifts" by professional nurses, physicians and nursing technicians.

Considering the professional categories, the results were similar between them in the non-compliance question. Regarding the records made by the medical professionals, they were more frequent during the day shift in the electronic medical charts, whereas during the night shift, the records were made in physical medical charts with no time recording. Consequently, the final results were similar across these three professional categories.

These professional categories presented very similar results regarding non-compliance, althou-

Table 1 - Compliance with the criteria to assess quality of the written communications in the UDVM of HPMAF. Natal, RN, Brazil, 2021 (n=60)

CRITERIA		COMPLIANCE FREQUENCY	
		n	
CRITERION 1	1.1 By the nurse.	0	0.0
	1.2 By the physiotherapist.	60	100.0
	1.3 By the physician.	5	8.3
	1.4 By the nursing technician.	5	8.3
CRITERION 2	2.1 By the nurse.	19	31.7
	2.2 By the physiotherapist.	40	66.7
	2.3 By the physician.	55	91.7
	2.4 By the nursing technician.	8	13.3
CRITERION 3		60	100.0
3.1 Prescriptions without non-standardized abbreviations and symbols.		60	100.0
3.2 Prescriptions with indication of the doses and use of decimals and zeros.		60	100.0
3.3 Prescriptions with generic denomination of the medications.		60	100.0
CRITERION 4	4.1 By the nurse.	0	0.0
	4.2 By the physiotherapist.	60	100.0
	4.3 By the physician.	5	8.3
	4.4 By the nursing technician	0	0.0

Source: Prepared by the authors, 2021.

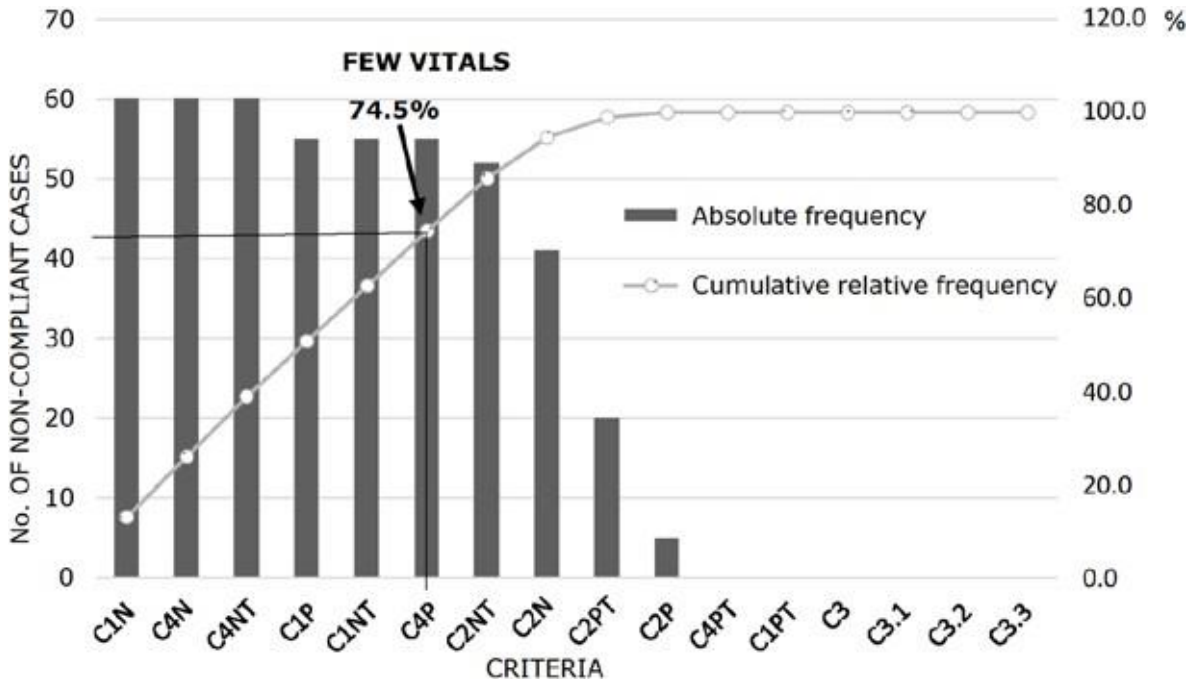

Figure 2 - Pareto Chart showing the absolute, relative and cumulative non-compliance frequencies regarding the criteria to assess quality of the written communications in the UDVM of HPMA. Natal, RN, Brazil, 2021 (n=60)

Source: Prepared by the authors, 2021.

Note: C1N: Date and time of the records made by the nurse; C1PT: Date and time of the records made by the physiotherapist; C1P: Date and time of the records made by the physician; C1NT: Date and time of the records made by the nursing technician; C2N: Identification of the records made by the nurses with signature and stamp with legible name and registration number in the professional council; C2PT: Identification of the records made by the physiotherapist with signature and stamp with legible name and registration number in the professional council; C2P: Identification of the records made by the physician with signature and stamp with legible name and registration number in the professional council; C2NT: Identification of the records made by the nursing technician with signature and stamp with legible name and registration number in the professional council; C3: Drug prescriptions in the electronic medical chart; C3.1: Prescriptions without non-standardized abbreviations and symbols; C3.2: Prescriptions with indication of the doses and use of decimals and zeros; C3.3: Prescriptions with generic denomination of the medications; C4N: Evolution by the nurse, in the day and night shifts; C4PT: Evolution by the physiotherapist, in the morning and afternoon shifts; C4P: Evolution by the physician, in the day and night shifts; C4NT: Note by the nursing technician, in the morning, afternoon and night shifts.

gh this is due to the fact that compliance with the criterion had to occur during both the day and night periods to be counted as compliance. In the case of the medical records, most were made during the day shift in the electronic medical charts, whereas during the night shift, in addition to being handwritten, there is no time recording. Therefore, due to partial compliance, the final results were similar across these three professional categories.

DISCUSSION

Date and time recording (Criterion 1) in each note or evolution made in the medical charts is indispensable for understanding the events and evolution of the patient, in addition to serving as support for the team assisting the patient[9,12]. This failure in time recording points to a weakness and can expose patients to possible repetitions of courses of action and to misinterpretation of the evolutions[8]. Even with the evolutions included in the electronic medical charts, recording of complications causes doubts because they are presented on more than one day and do not clarify, for those who read the medical chart, the moment when it was done.

However, it is common to find records in physical medical charts alluding to the shift on duty (07 a.m.-1 p.m. or 07 p.m-07 a.m.) without specifying the time, as was the case in a study that analyzed public hospitals in Rio Grande do Norte[5]. In this recording standard, importance

is not attributed to recording complications according to the time when they arose[12].

However, it is relevant to know the time interval between the care provided and the complications presented by the patient. This was more frequent in the physical charts, mainly noticed in the night shift with the records made by the medical professionals who did not report the time when the assistance was provided.

Criterion 2, fundamental from the ethical point of view and mandatory by the professional councils, presented significant non-compliance in the UDVM medical charts, mainly by the Nursing team, as was the case in other studies analyzed[5,12].

Identification of the Nursing professionals is still missing in the records of their activities, with little adherence by the professionals, which can be related to devaluation of this tool and to work overload or to mechanization of the record, in which the same pattern is repeated without valuing the care measures or the complications, generating risks for care continuity and favoring adverse events[12].

In this research, unlike the nurses, the physicians and physiotherapists presented better adherence to the professional identification as standardized by their respective councils[12]. Training, the actions taken by the councils and a number of cultural issues regarding professional appreciation can exert an influence on this decision.

In Criterion 3, in the assessment of the medical prescriptions, there was 100% compliance with the subcriteria. That said, a literature review on medication errors identified that electronic prescription is an important tool for reducing non-compliance in prescriptions, although it may encounter limitations due to resource requirements and to use restrictions for emergency situations[13-14].

A study on the analysis of the non-compliance cases in prescriptions at a hospital revealed a 78.5% reduction in these failures with the implementation of electronic prescription[14]. Considering that the hospital analyzed in this research has already implemented electronic prescriptions many years ago, it can be considered that there were changes in the assistance provided due to the use of medical charts, as the implementation of electronic forms corroborates systematization of the assistance provided[4].

Some other aspects also favor this behavior. The first is the absence of patient turnover, which facilitates the existence of pre-fixed data in the medical charts, such as prescriptions that can simply be adjusted and thus favor maintenance of the care measures for these chronic patients. Another point is registration of the medication names and standardized abbreviations and acronyms, which favors knowledge by the sector's team and minimizes errors in drug administration. These aspects are important points of the electronic medical charts which the management area must pay attention to in order to provide the assistance team with standardized tools.

Despite being available in the analyzed institution for some years, use of electronic medical charts (Criterion 4) was one of the main non-compliance issues found in the research. This can be related to the transition from physical to electronic medical charts, which is limited by the computer equipment. This case must be worked on between the team and the unit management, offering training and sufficient material to perform the service.

This transition is not simple and, in addition to the structural part, it involves the cultural aspects related to organization of the work processes, the professionals' technical competences in computerization, and acceptance by the team[15].

The scenario of this study therefore presents a "mixed" medical chart, with an electronic medical chart system, although there are still printed documents and handwritten forms. There is also a division between the professionals who use electronic medical charts (physicians and physiotherapists), and those who use physical charts (Nursing team). This segregation between the professionals is clear and can have consequences for the care of patients with CCCs, as effective communication generates safety in the actions offered, reducing the number of adverse events and unfavorable outcomes[4,7].

This fact becomes worrisome because the Nursing team is the key to strengthening communication across several teams, as it is uninterruptedly providing care to the patients and can be a link between the various professionals, being important that their records can be read and evaluated in a multiprofessional way[7,16]. Thus, this division in communication can promote room for severe failures in the care process.

From this perspective, in a study with a university hospital, one of the barriers to implementing electronic medical charts would be obtaining resources for their acquisition, in addition to adherence by the team. Thus, considering that the

hospital has an electronic medical chart system, it would be fundamental to reduce underutilization in order to improve quality of the records[16]. In this research, concentration of approximately 75% of the non-compliance cases that correspond to the general criteria of date and time and professional evolution is noticed. These criteria considered as "few vitals" are important opportunities for improvement that the management area itself can address with the professionals in the sector, as they concentrate most of the problems in the sample analyzed.

The professional categories analyzed in this study presented very similar results regarding non-compliance, but this is due to the fact that compliance with the criterion should occur during the day and night periods to be counted as compliance. Given the above, non-compliance instances might be less frequent if electronic medical charts were adhered to.

The date and time records (Criterion 1) are automatic when done electronically, which would require training of the team and adequate infrastructure, as well as attention by the professionals to recording the time when complications arose during the shift. Identification of the professionals in the electronic charts is also automatic, which could confer greater compliance with Criterion 2.

A number of studies conducted to analyze the causes that lead to failures in the records of the medical charts point out the following as the main causes: inattention and disinterest by the professional; work overload; lack of knowledge about legality of the records; interference in the physician-patient relationship; the time for recording data in the system, which is longer at the beginning and is reduced with adaptation and incorporation into the work routine; and fear and distrust towards the technological resource and its possible instability[4,7,16-17].

As was done in these studies, designing the local scenario and recognizing the limitations that interfere with adherence to the use of electronic medical charts are fundamental guidelines for outlining the necessary interventions for better adherence to electronic medical charts and to good recording practices. Integration of the multiprofessional team is feasible through effective communication tools and has positive consequences for quality of the services and for patient safety, with the possibility of optimizing resources and outlining more resolute plans regarding the care to be provided to the clients[5]. Thus, therapeutic plans should be elaborated for children with CCCs, in order to hold all the professionals involved in this process accountable, to effectively implement the care to be provided and ensure multidisciplinary analysis, developed with the improvement of communication between the professionals[7,12,16-17]. Therefore, investing in improving the written communication tool already available is an important strategy, given the impact it can exert on these children's lives. The results also allow for greater team integration, in which their awareness regarding verbal and non-verbal communication is crucial. In this scenario, this study contributes considerably to improving health care, as it showed the need to create and strengthen effective communication between the professionals, in order to also reinforce the indispensability of the Nursing team's performance in the context presented.

CONCLUSION

While assessing the written communication of the multiprofessional team in the Unit for Mechanical Ventilation Dependents at the Pediatric Hospital, some opportunities for improvement were observed, namely: absence of date and time in the records made by the physicians and the Nursing team; low adherence by the physicians to the night evolution in the electronic medical charts; and limitation in access and use of this system by the Nursing team.

Regarding compliance with the criteria, excellent adherence to electronic prescriptions was verified. In this scenario, there is an underused electronic medical chart system that has much to contribute to team integration, information sharing, and improvement of the quality of the records. From this perspective, it is important that new studies be conducted in order to ensure the implementation of interventions and new assessments about communication regarding medical charts and the criteria herein evaluated.

CONFLICT OF INTERESTS

The authors have declared that there is no conflict of interests.

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