

ABBREVIATIONS SYSTEM: PRELIMINARY RESULTS OF A SATISFACTION STUDY

SISTEMA DAS ABREVIATURAS: RESULTADOS PRELIMINARES DE UM ESTUDO DE SATISFAÇÃO

José Federico Rodriguez¹, Daniel Rizzato Lede¹, David Pérez¹, Sonia Benítez¹ y Daniel Luna¹.

¹ Department of Health Informatics, Hospital Italiano de Buenos Aires,
Buenos Aires, Argentina.

Resumo: Introdução, com a finalidade de conhecer as opiniões e percepções, este estudo avaliou o impacto que têm um sistema de auto expansão de abreviaturas na satisfação dos usuários em nosso Hospital. Método, o método foi misto, com entrevistas semi estruturadas, entre dezembro 2015 e janeiro 2016, onde foram incorporados 7 médicos de diferentes especialidades. Enviou-se previamente o questionário por e-mail e finalmente se realizou um análise descritivo das perguntas. Resultados, a maioria esteve “bastante satisfeita” com a utilidade do aplicativo, mais da metade respondeu que é “bastante fácil” ou “muito fácil” de usar.

Discussão-Conclusão, os profissionais consideraram que o uso do aplicativo melhorou a comunicação escrita, diminuiu os erros, favoreceu a compreensão e melhorou o seu trabalho. Vários encontraram significados errados, poucos observaram as mudanças solicitadas nas sugestões. Melhorar o suporte e a qualidade da informação, que limitam o grau de conformidade, aumentaria o nível de satisfação.

Palavras-chave: Registros Eletrônicos de Saúde, Abreviaturas, Inquéritos.

Abstract: Introduction, in order to know the opinions and perceptions, this study evaluates the user satisfaction and impact of a Synchronous Self-expanding Abbreviation (SSA) system in our Hospital. Methods, mixed methods research with semi-structured interviews from December 2015 to January 2016, were included for convenience 7 doctors of different specialties. The survey was previously sent by email and finally a descriptive analysis of the questions was performed. Results, most were “quite satisfied” with the usefulness of the application, more than half said it is “fairly easy” or “very easy” to use. Discussion-Conclusion, professionals considered that the use of application improves the written communication, reduces errors, promotes understanding and improves their work. Many users found wrong meanings, few observed the changes requested in the suggestions. Improve support and quality of information, which limit the degree of conformity, would increase the level of satisfaction.

Keywords: Electronic Health Records, Abbreviations, Survey.

Introduction

The abbreviations are used widely in medical records facilitating the providers' workflow and optimizing the time spent on clinical documentation. For example, in those cases where each note is read by colleagues, it shortens the reading time of the document. However, sometimes these shortcuts could be misinterpreted, mainly when the record is handled by different specialties, which may lead to a lack of communication between healthcare professionals, promoting the occurrence of errors.¹ The

interpretation may vary when different providers analyze the clinical notes affecting the behaviors and decisions made in the patient care.²

In this situation, some of the unsuccessful actions taken by health care organizations include regulate or not allow the use of abbreviations through institutional policies. Less restrictive alternatives implemented are tools developed to expand abbreviations in real time as well as asynchronous disambiguation.^{3,4} Due to ease of use and benefit of expanding the abbreviations in one time, the Hospital implemented a software tool for synchronous disambiguation in the Electronic Health Record (EHR). As a part of the project, we evaluated the impact of the tool use and determine the degree of user satisfaction. The aim of this study is to know the opinions and perceptions of physicians regarding the use of the tool and to develop a satisfaction survey for evaluating the implemented system.

Materials and methods

This is a mixed method study and was conducted in an academic tertiary hospital with 750 inpatient beds (200 for critical care), with 2800 physicians, 2800 agents of the health team and 1900 administrative personnel. The Health Information System (HIS) has been implemented gradually since 1998 and includes a problem-oriented and patient-centered web based EHR.⁵ In August 2015 was implemented the Synchronous Self-expanding Abbreviation (SSA) system, that detects abbreviations in a free text field. This system was user-centered designed and typical abbreviations and their meanings were collected from different areas of the hospital in its construction. The abbreviations can be “unequivocal” (one meaning), “ambiguous” (more than one meaning) and “undefined” (undefined terms). SSA detected about 4000 abbreviations (1000 univocal, 5000 Ambiguous and 2500 not defined), decreasing almost 40% in the use of abbreviations post implementation.

The study was approved by the Ethics Committee of the Hospital through a research protocol with a verbal informed consent; also, it included different steps in order to generate the survey (Figure 1). In Phase 1, a list of questions was generated after a literature review. The survey included questions from a satisfaction survey on Clinical Decision Support System (CDSS) adapted for Medication⁶ and Clinical Abbreviation Disambiguation in Real Time.⁴

In Phase 2, was conducted the qualitative pretest. From December 2015 to January 2016, we invited physicians from different specialties with more than six months of seniority using the EHR, and who were used to writing clinical notes. We tried to get a full representation of our medical staff, according to level of care where they worked, number of beds per specialty, and their working areas. Using a semi-structured interview they were invited to comment on any aspect that has been difficult to understand. We asked opinions about the implemented solution and the interpretation of questions in order to improve the wording of every sentence in the survey. The questions were about the usefulness of the system, ease of use, the time it takes to perform each progress note, the impact in patient care; among other domains. This process allowed improving the survey. This step allowed us to evaluate the quality of the survey and calculate the time for conducting the survey.

In all cases, the interviews were audio-recorded to be stored for later analysis, with the consent of the participant. In addition, every participant received the survey (Google Forms ®) by email. The structured data were collected on spreadsheets. A descriptive analysis was performed of structured questions and also a content analysis of the suggestions.

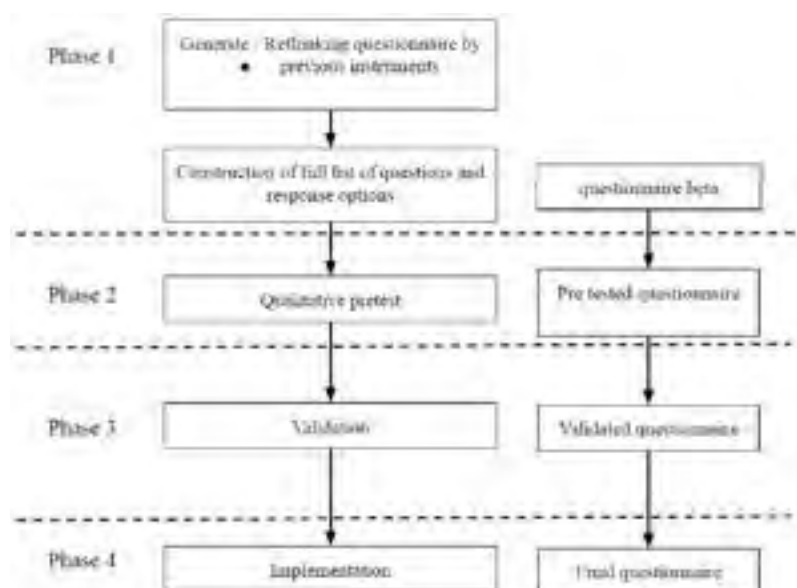


Figure 1: Steps to generate the survey.

Results

At the moment that we wrote this report, the study included seven physicians (male =5), specialists in Nephrology, Cardiology, Pediatrics, Neurology, Urology, Orthopedics and Traumatology, all of them frequent users of the EHR, between 25-30 years old, working in two or more levels of patient care. When we asked about overall satisfaction, the majority of users were “quite satisfied” with the usefulness of the application. Regarding the ease of use of SAA, more than half said it is “fairly easy” or “very easy” to use. The remaining responses related to regular work, abbreviations understanding by other specialties, wrong meanings, suggestions for changes, add news terms and written communication of the health team are detailed in Table 1.

Table 1 Standings answers

Questions	Answer	n=7
In general, how satisfied are you with the system of abbreviations? *	Quite satisfied	5 (71,43%)
How easy to use is the abbreviation system?	Easy / Very easy	4 (57,14%)
	Normal	3(42,86%)
Overall, how well does the abbreviation system improving your work? *	A lot / Something	5(71,43%)
To what extent do you feel that the abbreviation system interrupts your record in the EHR?	Almost nothing	4(57,14%)
	A bit	3 (42,86%)
The expanded abbreviations from other specialties, How does it help your comprehension?	A lot	4(57,14%)
	Something	2(28,57%)
To what extent it considers the abbreviations system decreases the chance of mistakes and misunderstandings in clinical documents? *	Something	4(57,14%)
	A lot	2(28,57%)
By recording in the EHR, how often the system suggests a wrong meaning to the detected abbreviations?	Many times	4(57,14%)
	Sometimes	2(28,57%)
To what extent you consider the abbreviations system improves written communication of the health team? *	A lot	4(57,14%)
	Something	3(42,86%)
Did you make suggestions for change or add abbreviations?	Yes	7(100%)
Did the requested changes were made?	They were completed	3(42,86%)
When recording in the HCE, How useful would be to provide the meanings of abbreviations according to the care area or service?	Very useful	4(57,14%)
	Nothing	3(42,86%)

* Questions with the best answers

When they were asked about suggestions for changes and the responses of the system support, some opinions were: ‘...I suggested several times, they don’t want change it. Can I send by help desk? I don’t know ... going for suggestions? I will keep trying. I will send with exclamation marks...’; ‘...I suggested through the small window in the progress notes and I never got a response ...’, ‘...I sent modifications, I requested add new terms but I didn’t received any reply and I haven’t saw the changes ...’.

Domains with best results are shown in figure 2. For that, were taken the proportion of positive answers (Options “Something”, “Enough”, “A lot”).

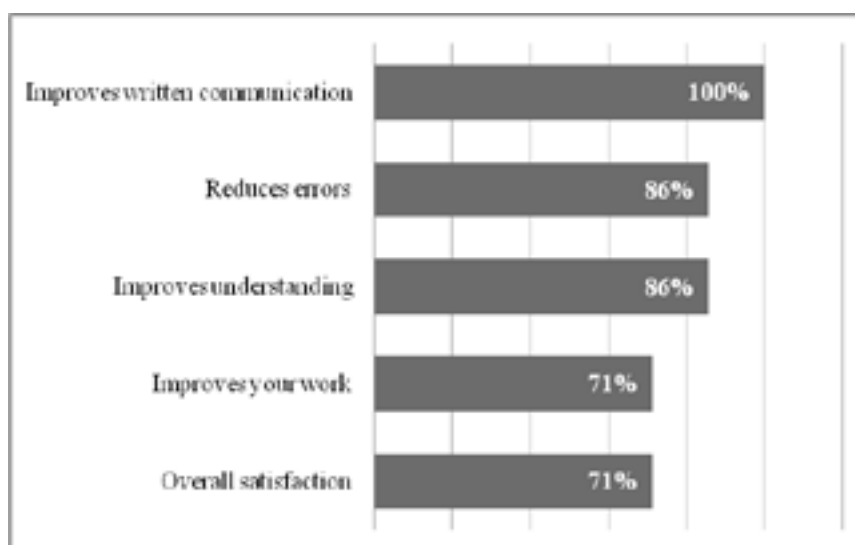


Figure 2: Answers with best results (positive responses).

Discussion

As a part of the development of a satisfaction survey in the evaluation of the use of the implemented system, this study was done to know the views and perceptions of professionals about the use of the self-expanding abbreviation system. As it was mentioned, most of the users were “very satisfied” with the usefulness of the application and generally all domains had positive responses. It is noteworthy that professionals consider the use of application improves written communication, reduces errors in clinical record, promotes reading comprehension, improves their work, and more than half did not perceive that the system interrupted the record process.

While the results were obtained from only 7 users recruited for convenience, we highlight that these correspond to different specialties, in which medical residents and staff physicians were included. We believe that the overall satisfaction could be modified considering that almost 60% of participants said they “often” find wrong meanings in the detected abbreviations. On the other hand, all professionals made suggestions for modifications and additions of meanings of abbreviations through channels of suggestions and complaints, but little less than half they could observe the changes requested. These are the factors that could cause users were not more satisfied with the use of abbreviations and, as described in other studies, the satisfaction is a multi-factorial phenomenon that influences the degree of conformity with information systems.^{7,8} More studies are needed to determine and confirm these results.

This is part of a work that aims to evaluate the developed tool and continue with the cycle of continuous improvement of the system, which will allow adapt the survey to be distributed to a greater number of users.

Conclusion

This study shows that users are overall satisfied with the usefulness of the abbreviations system in the EHR. However, there are factors such as the system support and quality of information that constrain the degree of conformity, which they could be intervened to increase the level of satisfaction.

References

- [1] Parvaiz MA, Subramanian A, Kendall NS. The use of abbreviations in medical records in a multidisciplinary world--an imminent disaster. *Commun Med.* (2008) Jan; 5(1):25–33.
- [2] Choy Koh K, Mun Lau K, Aisyah Mohd Yusof S, Ikhwan Mohamad A, Syazana Ahmad Shahabuddin F, Hazirah Ahmat N, et al. A study on the use of abbreviations among doctors and nurses in the medical department of a tertiary hospital in Malaysia. *Med J Malaysia.* 2015;70(6).
- [3] Wu Y, Denny JC, Rosenbloom ST, Miller RA, Giuse DA, Xu H. A comparative study of current Clinical Natural Language Processing systems on handling ab-breviations in discharge summaries. *AMIA Annu Symp Proc.* (2012); 2012:997–1003.
- [4] Wu Y, Denny JC, Rosenbloom ST, Miller RA, Giuse DA, Song M, et al. A Preliminary Study of Clinical Abbreviation Disambiguation in Real Time. *Appl Clin Inform.*(2015); 6(2):364–74.
- [5] Luna D, Plazzotta F, Otero C, González Bernaldo de Quirós F, Baum A, Benítez S. Incorporación de tecnologías de la información y de las comunicaciones en el Hospital Italiano de Buenos Aires. (2012).
- [6] Kim J, Chae YM, Kim S, Ho SH. A Study on User Satisfaction regarding the Clinical Decision Support System (CDSS) for Medication. - MEDLINE® - ProQuest. (2012); 18(1):35–43.
- [7] Petter S, DeLone W, McLean E. Measuring information systems success: models, dimensions, measures, and interrelationships. *Eur J Inf Syst.*(2008); 17(3):236–63.
- [8] Palm J-M, Dart T, Dupuis I, Leneveut L, Degoulet P. Clinical information system post-adoption evaluation at the georges pompidou university hospital. *AMIA Annu Symp Proc.* (2010); 2010:582–6.

Contact

José Federico Rodríguez, Department of Health Informatics.

Hospital Italiano de Buenos Aires, Juan D. Perón 4190, C1181ACH Buenos Aires, Argentina.

E-mail:

josef.rodriguez@hospitalitaliano.org.ar.