Original Article

Evaluation of quality of Risk Classification in Emergency Services

Avaliação da qualidade da Classificação de Risco nos Serviços de Emergência

Kelly Cristina Inoue[1]
José Aparecido Bellucci Júnior[2]
Marília Angelina Ferreira Papa[3]
Raphaela Calinca Vidor[4]
Laura Misue Matsuda[5]

Keywords
Safety management/classification; Emergency service, hospital; User embracement; Nursing, team; Nursing assessment

Descritores
Gerenciamento de segurança/classificação; Serviço hospitalar de emergência; Acolhimento; Equipe de enfermagem; Avaliação em enfermagem

Submitted
January 21, 2015

Accepted
March 4, 2015

Abstract

Objective: To assess, on the basis of the perspective of nursing professionals, the structure, process, and results of a screening system, Embracement with Risk Classification, integrated in some Brazilian emergency services.

Methods: This cross-sectional study included 151 nursing professionals who completed the Instrument for Assessment of Embracement with Risk Classification. We measured the mean ranking of each item and representativeness of the structure, process, and result dimension.

Results: Only the dimension "result" of a single emergency service was evaluated as fair. The remaining dimensions, for all other services investigated, were considered poor.

Conclusion: Results indicated improvements in the quality of care delivered and prioritization of severe cases. However, improvements in the flow of against-reference system are still needed.

Resumo

Objetivo: Avaliar a estrutura, o processo e o resultado do sistema de triagem Acolhimento com Classificação de Risco implantado em serviços de emergência brasileiros, sob a perspectiva de profissionais de enfermagem.

Métodos: Pesquisa transversal que incluiu 151 profissionais de enfermagem que responderam ao Instrumento para Avaliação do Acolhimento com Classificação de Risco. Calculou-se o *Ranking* Médio de cada item e foi verificada a representatividade das dimensões estrutura, processo e resultado.

Resultados: Apenas a dimensão resultado, de um único serviço de emergência, foi avaliada como Satisfatória. As demais dimensões, de todos os serviços investigados, foram consideradas Precárias.

Conclusão: Os resultados indicaram melhorias na qualidade do atendimento prestado, com priorização dos casos graves, mas é preciso melhorar o fluxo do sistema de contrarreferência.

Corresponding author
Kelly Cristina Inoue
Morangueira Avenue, PR 317, 6114,
Maringá, PR, Brazil.
Zip Code: 87035-570
kcinoue1981@gmail.com

DOI
http://dx.doi.org/10.1590/1982-0194201500071

[1]Faculdade Ingá, Maringá, PR, Brazil.
[2]Universidade Estadual do Norte do Paraná, Bandeirantes, PR, Brazil.
[3]Serviço de Atendimento Móvel de Urgência, Cianorte, PR, Brazil.
[4]Santa Casa de Misericórdia de Maringá, Maringá, PR, Brazil.
[5]Universidade Estadual de Maringá, Maringá, PR, Brazil.

Conflicts of interest: none reported.

Introduction

Risk classification screening involves a complex decision making process. For this reason, different systems have been developed worldwide to support nurses in better classifying the severity of each case.[1,2] In general, these classification systems aim to reduce the time that patients have to wait in hospital emergency departments by prioritizing more severe cases in which an obscure prognosis can lead to a delay in treatment.[1]

Internationally, the most used screening systems for risk classification are the Australian Triage Scale, Canadian Emergency Department Triage and Acuity Scale, Manchester Triage Scale, and the Emergency Severity Index.[1] In Brazil, the government has been recommending the screening system Embracement with Risk Classification since 2004.

Embracement with Risk Classification entails the systematization of risk classification process, which is based on four levels of severity, with emphasis on actions, developed by the health team to embrace the patient and his/her caregiver in order to provide humanized care. This approach constitutes a way to redefine the screening process, which commonly ends in the patient admission, to enable inclusive action at all health care settings.

Protocols or guidelines that support severity classification in Embracement with Risk Classification are defined by objective and subjective parameters, times, and flow that can be changed according to the criteria of each institution.

Independently of the system used, screening of risk classification is an important aspect of health care.[3] When screening is done by experienced nurses, it contributes to patient safety and enables rationing of resources for health care.[4] However, positive results from implementing a screening system of risk classification requires adequate and continual evaluation of structure and work processes.

Quality measures of risk classification screening systems have been investigated, including the analysis of such indicators as a confidence index for the screening scale, the time that patients have to wait to receive care, and admission or adverse reactions rates, among others.[5] Such measures, although important, often limit the global assessment of quality of emergency service, because of the single-focused evaluation of tools used for risk classification screening in relation to patients' outcomes.

Although complex, the interaction among factors that make up the assessment of health quality has been supported in structure, process, and results dimensions, also known as Donabedian's triad model, as proposed by Avedis Donabedian.[6]

It is important to determine improvements needed, if any exist, in the services that incorporated the Embracement with Risk Classification, based on nursing professionals' perspectives, especially because the nurse is the responsible for the risk classification procedure during screening, which is based on protocols previous discussed and defined along with medical team. In addition, nursing professionals are responsible to deliver care for patients during hospitalization and may define accurately weakness and possible strategies for the Embracement with Risk Classification.

Identifying problems or inadequacies can support the development and establishment of local actions from managers and professionals in order to increase the quality of care offered by the service. The quality monitoring is characterized by continual surveillance that enables early detection and correction of distortions.[6] For this reason, our study aimed to assess, on the basis of the perspective of nursing professionals, the structure, process, and results of Embracement with Risk Classification in Brazilian emergency services.

Methods

This exploratory study with a quantitative approach was carried out between March and May 2013 at the emergency service of four hospitals in the State of Paraná, Brazil, randomly designated as I, II, III, and IV.

Emergency service I was part of a large philanthropic hospital, service II was part of a large private non-profit hospital and services III and IV

were part of medium-sized general public hospitals. These services (I, II, III and IV) implemented the Embracement with Risk Classification in 2011, 2010, 2009 and 2007, respectively.

We conducted a stratified random sampling, by a drawing, of 60% of nursing professionals (nurses, nursing technician, and assistant) who worked in the emergency service for 3 months or more. In cases that professionals were on legal leave, regardless of the reason, a new drawing was done. There were no refusals or withdrawals.

A total of 151 nursing professionals participated in the study. Of these, 19 (12.6%) worked at emergency service I, 24 (15.9%) at hospital emergency service II, 38 (25.2%) at hospital emergency service III, and 70 (46.4%) at hospital emergency service IV.

Data were collected during individual interviews in a private environment at participants' workplace using the Instrument for Assessment (composed of two parts) of the Embracement with Risk Classification.[7] Part I was designed for obtaining sociodemographic and profession data from participants; part II pertained to assessment of Embracement with Risk Classification.

Part II was composed of 21 items on a Likert scale of five levels equally divided into Donabedian's dimensions: structure (items 1-7), process (items 8-14), and result (items 15-21). Each item score ranged from 1 to 5. Responses scored from 1 or 2 were considered discordant, those scored 3 were considered null or indifferent, and those scored 4 or 5 were considered concordant.

The Statistical Package for the Social Sciences (SPSS), version 20, was used for descriptive statistical analysis; we calculated absolute and percentage frequency as well as means and standard deviations.

Initially, data from part II that corresponded to the negative scale form (items 3, 4, 5, 7, 10, 14, 16, 19, and 20) were inverted (became positive) to measure a general score, which is required for statistical treatment. To analyze items for the assessment instrument, we measured the mean ranking on the Likert scale obtained by the mean for each item/dimension, subsequently divided by number of respondents. Results of this operation with values closest to a score of 5 were interpreted as a high level of professional satisfaction and when closest to a score of 1, as the lowest level of satisfaction.

Next, as recommended by authors of the Instrument for Assessment of Embracement with Risk Classification, we verified the representativeness of the assessment of each dimension from the mean score of its respective items: excellent, 31.5-35 points; fair, 26.2-31.4 points; poor, 17.5-26.1 points; and insufficient, 7-17.4 points.[7]

Development of this study followed national and international ethical and legal aspects of research on human subjects.

Results

Table 1 shows characteristics of the participants according to the respective emergency service.

Table 1. Participant characteristics

SHE	I	II	III	IV	All
Variable	n(%)	n(%)	n(%)	n(%)	n(%)
Sex					
Male	7(36.8)	9(37.5)	10(26.3)	21(30.0)	45(29.8)
Female	12(63.2)	15(62.5)	28(73.7)	49(70.0)	106(70.2)
Education					
Primary education	-	-	-	1(1.4)	1(0.7)
Secondary education	11(57.9)	8(33.3)	29(76.3)	38(52.9)	85(56.3)
College	5(26.3)	5(20.8)	4(10.5)	11(15.7)	25(16.6)
Graduate education	3(15.8)	10(41.7)	5(13.2)	20(28.6)	38(25.2)
Master degree	-	1(4.2)	-	1(1.4)	2(1.3)
Professional category					
Nurse	4(21.1)	15(62.5)	7(18.4)	19(27.1)	45(29.8)
Technical	15(78.9)	9(37.5)	31(81.6)	49(70.0)	104(68.9)
Assistant	-	-	-	2(2.9)	2(1.3)
Age (years)*	30.8±4.97	30.1±7.35	37.3±8.09	37.0±8.87	35.3±8.54
SHE time (years)*	3.8±3.15	2.2±1.76	3.9±3.74	3.7±5.06	3.5±4.15

SHE- Hospital Emergency Service; *Mean ± Standard Deviation

Table 2 shows, on the basis of each service, the mean ranking for each item assessment and its respective sums. In addition, in this table, the mean score indicated that nursing team considered all Donabedian's dimensions at all services as poor, with the exception of the dimension "result" for emergency service III, which was considered fair.

Table 2. Assessment of Embracement of Risk Classification

SHE	I	II	III	IV	AII
Item/Dimension - Variable	MR	MR	MR	MR	MR
1 Comfort of user / caregiver	3.1	2.6	2.6	3.4	3.1
2 Embrace environment	3.9	3.3	3.3	4.0	3.8
3 Periodic training	2.6	3.0	3.0	3.2	3.0
4 Privacy in consultations	3.2	3.6	3.6	3.4	3.4
5 Embracement of caregiver	2.4	2.9	2.9	2.8	2.7
6 Sign of environment	3.1	3.5	3.5	3.3	3.3
7 Communication between team	2.7	3.5	3.5	3.7	3.6
Structure dimension (PM)	21.0	22.5	22.2	23.8	22.9
8 Safety and comfort of user	3.6	3.6	3.6	4.0	3.9
9 Assessment of non-severe cases	4.2	3.1	3.1	4.2	4.1
10 Knowledge of management of ACCR	2.5	2.6	2.6	3.4	3.1
11 Relationship between leaders/subordinates	3.0	3.3	3.3	3.3	3.2
12 Discussion on flowchart	2.5	3.1	3.1	3.0	2.9
13Trained team	3.1	4.0	4.0	3.6	3.5
14 Revalidation of cases of waiting	3.6	2.6	2.6	3.3	3.1
Process dimension (PM)	22.5	22.2	23.6	24.8	23.8
15 Primary care for case severity	3.7	3.6	3.6	3.9	4.0
16 Care humanization	3.2	3.5	3.5	3.6	3.5
17 Integration in health team	3.6	3.5	3.5	3.7	3.6
18 Information on waiting time	3.6	2.6	2.6	3.9	3.7
19 Prioritization of severe cases	4.0	3.7	3.7	4.5	4.3
20 Against-reference	2.4	3.5	3.5	2.5	2.6
21 Satisfaction with results of ACCR	3.4	2.8	2.8	3.7	3.5
Result dimension (PM)	23.9	23.1	26.2	25.8	25.2

MR - Mean ranking; MS - Mean Score; SHE - Hospital Emergency Service; ACCR - Embracement with Risk Classification

Discussion

This study found gaps in operationalization of Embracement with Risk Classification that affirm the need for continuous assessment of this system for establishing discussion and actions that help improve care in emergency services. However, results presented in this study cannot be extrapolated because of such limitations as a small number of participants and services assessed and the diversity of risk classification protocols and infrastructure.

Based on participant characteristics, we found that participants' level of education shows enhance in the qualification of nursing professional that was higher than number reported by interviewed nurses (n=45, 29.8%) and indicated that nursing technicians had also graduated. Finally, some of the institutions in this study offered a career plan that provided additional compensation to employees as an incentive for participation in educational strategies, including undergraduate courses.

Concerning the variable time working as a nursing professional, all participants had experience in the area. At services I and III, these professionals may have already worked with Embracement with Risk Classification, which enabled a more precise assessment about the subject studied.

In the assessment of Embracement with Risk Classification, we verified that no item reached a mean maximum satisfaction score (5 points) and that no dimension was evaluated as excellent. This finding indicates that the emergency services studied still have room for improvement.

In general, the mean ranking of all items for assessment of Embracement with Risk Classification was close to 3-4 points, indicating neutrality and concordance, respectively, about the execution or existence of the item in the emergency service. Even with difficulties related to the implementation and execution of Embracement with Risk Classification in the locations studied, the results can be related to nursing professionals' positive perception of this assessment tool.

Ethnographic research done with 15 nurses in an emergency service at a Danish hospital also found participants' positive perception of the screening process; those participants mentioned feeling safe after implantation of the screening process in the service where they worked.[8]

The structure dimension was considered poor in all services; although physical changes made helped increase humanization of care, attention to comfort and safety needs of caregivers was still lacking.

Changes in physical structure that require changes to the building can be difficult to execute. However, it is possible to adopt less onerous solutions that can improve the adequacy of the location by assuring more comfort for patients and their families, such as those as privacy, lighting, and preventing excess noise.[9,10] In this sense, decreasing problems and improving the environment and embracement of caregivers in an emergency service can also lead to the adoption of measures for relaxation and entertainment while waiting the diagnosis and/or assessments.

Although assessments for the process dimension were better than those presented in the structure dimension, all services were also evaluated as poor.

We highlight the concordance of responses concerning the item related to assessment of non-severe cases in emergency services (item 9, MR=4.1 points) with responses to the item asking whether professionals who use Embracement with Risk Classification feel safe and comfortable in their work environment (item 8, MR=3.9 points).

In addition, we observed a tendency toward neutrality in answers concerning discussions about flowcharts, knowledge of management regarding Embracement with Risk Classification, revalidation of cases in the waiting room, and leaders and subordinates. These data show weakness of Embracement with Risk Classification in the process dimension because when poor relations between leaders and subordinates can compromise communication between professionals on the team. For this reason, discussions about flowcharts were probably limited and, as a consequence, result in a lack of understanding about behavior with Embracement with Risk Classification, including concerning strategies that can contribute to reassessment of cases in the waiting room.

It is important to highlight that problems in communication process among members of multidisciplinary team can result in adverse events and impact negatively patients' health. This requires the adoption of strategies to contribute for team work promotion and turn the communication easier among different health professionals.[11] The performance of activities and success of implementation of a screening system require that nurses develop assessment and communication skills associated with knowledge of ethical-legal and technical-scientific principles that guide the profession.[3] In addition, to implement changes, leaders must develop spaces for dialogue with their team and embrace improvement proposals.

Concerning reassessment of cases waiting for medical care at services II (MR=2.6 points) and III (MR=2.6 points), both institutions should help nurses become familiar with Embracement with Risk Classification and understand the importance of observation and follow-up progress of those who wait for health care. Although reassessment consumes more work time and can lead to professional dissatisfaction in the context of current worker shortages,[8] it is important to consider that risk classification is a dynamic process that involves periodic reassessment of risk of patients waiting for care because a patient's clinical condition can worsen over time.[1-3]

With regard to the result dimension, we highlight that only emergency service III was assessed as fair. In other services, this dimension was considered poor, but was still ranked higher than were the structure and process dimensions. On the basis of these results suggesting improvement of care quality, we believe that implementation of Embracement with Risk Classification has the potential to transform care even in locations and condition that are not favorable.

For all evaluated services using Embracement with Risk Classification, severely ill patients were prioritized for care (item 19, MR=4.3 points), and primary assistance was assigned according to severity of the case and do not by order of arrival (item 14, MR=4.0 points). However, we verified the need to improve the against-reference system, mainly in emergency services I (item 20, MR=2.4 points) and IV (item 20, MR=2.9 points). These data surely deserve special attention from managers because patients who require less complex care and in fact could be seen in a primary care setting still seek care in an emergency department. This leads to overbooking in the emergency services, increased health-related costs, and reduced care quality.[12]

Despite this, we recognize that all patients who sought emergency care need to be screened and classified to guarantee that they receive adequate assistance and, in this way, reduce risks of adverse events; this also would allow assessment of the system to guarantee best practices.[3] In this sense, it is important to widen the discussion on reasons for dissatisfaction of nursing professionals referrals and against-reference system, which presupposes fragility in basic care and lack of integration in health care network.

Conclusion

Nursing professions indicated that all Donabedian's dimensions were poor, mainly the items part of the structure dimension. Although Embracement with Risk Classification promotes improvements in care quality by prioritizing severe cases, there is still significant room for improvement, especially against-reference system in the evaluated services.

Collaborations

Inoue KC, Bellucci Júnior JA, Papa MAF, Vidor RC e Matsuda LM contributed with drafting the manuscript, critical review relevant for intellectual content and approval of final version to be published.

References

1. Farrohknia N, Castrén M, Ehrenberg A, Lind L, Oredsson S, Jonsson H, Asplund K, Göransson KE. Emergency department triage scales and their components: a systematic review of the scientific evidence. Scand J Trauma Resusc Emerg Med. 2011 Jun; 19:42.
2. FitzGerald G, Jelinek GA, Scott D, Gerdtz MF. Emergency department triage revisited. Emerg Med J. 2010 Feb; 27(2):86-92.
3. Ganley L, Gloster AS. An overview of triage in the emergency department. Nurs Stand. 2011; 26(12):49-56.
4. Ek B, Svedlund M. Registered nurses' experiences of their decision-making at an Emergency Medical Dispatch Centre. J Clin Nurs. 2014 Oct 2. doi: 10.1111/jocn.12701. [Epub ahead of print].
5. Qureshi NA. Triage systems: a review of the literature with reference to Saudi Arabia. East Mediterr Health J. 2010;16(6):690-8.
6. Best M, Neuhauser D. Avedis Donabedian: father of quality assurance and poet. Qual Saf Health Care. 2004;13(6):472-3.
7. Bellucci Júnior JA, Matsuda LM. Construção e validação de instrumento para avaliação do Acolhimento com Classificação de Risco. Rev. bras. enferm. 2012;65(5):751-7.
8. Johansen MB, Forberg JL. Nurses' evaluation of a new formalized triage system in the emergency department - a qualitative study. Dan Med Bull. 2011;58(10):A4311.
9. Trochelman K, Albert N, Spence J, Murray T, Slifcak E. Patients and their families weigh in on evidence-based hospital design. Crit Care Nurse. 2012;32(1):e1-e10.
10. Bromley E. Building patient-centeredness: Hospital design as an interpretive act. Soc Sci Med. 2012;75(6):1057-66.
11. Liaw SY, Zhou WT, Lau TC, Siau C, Chan SW. An interprofessional communication training using simulation to enhance safe care for a deteriorating patient. Nurs Educ Today. 2014;34(2):259-64.
12. Shaw EK, Howard J, Clark EC, Etz RS, Arya R, Tallia AF. Decision-making processes of patients who use the emergency department for primary care needs. J Health Care Poor Underserved. 2013; 24(3):1288-305.