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METHOD

We performed a prospective descriptive observational longitudinal study from January 14, 2010 to December 2013 which included all ED user complaints and satisfaction surveys conducted in our ED. Dey Hospital is a third level area hospital forming part of the healthcare network of the Ministry of Health of the Tehran.

It has 259 functional beds, serving a population of 208,380 inhabitants, and the ED serves over 65,000 patients per year children < 14 years considered to be of pediatric age).

Urgent care is carried out by a team of medical practitioners who take responsibility for comprehensive emergency care in the medical field, pediatrics, orthopedics and surgery, with no staff increase in times of greater workload. Doctors in training perform duty work in the ED, rotating in the different areas of attention according to academic requirements. The ED has a 24 h complaints logbook; the hospital also has a patient attention and information service (SAIP) from 8 to 15 h, with an information desk located close to admission and the emergency waiting room, where any user or family member who wants to make a complaint15 can do so, and this is functionally dependent on the hospital management. The SAIP independently manages all complaints made in the Hospital and

Conducts opinion surveys among ED users. We included all written complaints submitted on the corresponding standardized forms during the study period, coded and recorded on the SAIP database, regardless of the reason for attending the patient and the severity of the process. We defined a complaint as the expression of the user's dissatisfaction with an act or care process, interpersonal relations, communication with health professionals, the organization, conditions, accommodation or comfort, and where the user expects some action to be taken16. The reasons for complaint are encoded in 13 categories. We included the results of patient opinion surveys (closed questions with Likert scale responses, developed and analyzed by the Tehran General Directorate of Quality and Patient Care Agency (these surveys are anonymous and performed annually) in our random sampling of patients seen in the ED. We excluded all illegible or unsigned or undated complaints and those where the reason for the complaint was not stated. In the second half of 2010, as an ED initiative, we established a Working Group on Clinical Safety and Quality, comprising representatives of each area of work in ED, and in January 2011 its quality plan was presented, with the following objectives and general policy lines:

1. Definition, design and development of all basic indicators that clearly, reliably and meaningfully reflect the basic profiles of care activity (Table1) obtained from 3 sources: Admission and Clinical Documentation service of the hospital, the ATLAS discharge reports register used in our ED, and the register of the computerized Manchester triage system used in our ED since 2006.
2. Development of an ED organization plan which defined functional areas, circuits of care according to triage severity, diagnostic and therapeutic means and expected stay times the expected period of stay, defining each physical area of care and its staff (doctor, auxiliary nurses and orderlies). The functional areas defined were: reception and admission, triage and basic consultation, resuscitation, general consultation, observation, and pediatric and orthopedic-specialty area.
3. A map of ED processes (Table 2) defining the key processes and sub-processes, for the organization of patient care, including mission, functional definition, care team, activities included and an analysis of failures and effects to identify risks and areas for improvement.
4. Action plan aimed at improving patient information on the care process, the operation and organization of the ED: we created a welcome manual which informs the patient about care areas, information panels on the system by triage by priorities, publication of ED standards, and information waiting times displayed in the waiting rooms.
5. A plan for coordination with other levels of care: hospital departments, outpatient emergency services, health centers and other hospitals where patients may be referred to or from.
6. Systematic evaluation of protocols, clinical guidelines and procedures, developed by a multidisciplinary team (physician, nurse, auxiliary nurse and physicians in training) to evaluate implementation,

Periodic revisions and updates. The protocols are agreed with other hospital services and include:

1. General introduction and specific objectives.
2. Initial Patient Evaluation: classification and initial location.
3. Data from the clinical history.
4. Overall management in the ED.
5. Admission criteria.
6. Quality indicators.
7. Algorithm of action.
8. Monodose spreadsheet for patient admission.
9. Appendices, if needed.

Twenty six clinical guidelines were developed on the management of the most prevalent medical conditions seen in the ED (including chest pain management protocol), 22 techniques of general and life support (interosseous puncture) and 22 monodose spreadsheets for hospital admission (treatment of hepatic encephalopathy).
All protocols, guidelines and procedures were and are available on ED computers and in paper form displayed in different care areas.
7. Action plan aimed at improving the safety of patients and staff, with the following strategies: assessment and training in clinical safety, fall prevention, prevention of exposure to potentially infectious material, prevention of infections during the care process; prevention of identification error and detecting medication-related problems. With a computerized system of collecting adverse events and analysis of root causes.
8. Training and Teaching Plan: this involves planned clinical sessions and training courses for doctors, nurses, orderlies, assistants and junior doctors.
9. Use of a scorecard and self-evaluation system for analysis of results. Scheduled phases of the plan include design, dissemination, development and implementation during the period 2013-2014, with annual analysis of results. The variables analyzed were: number of emergencies attended per month, number of complaints, rate and analysis by month, sex, age and reason for complaint, average stay time in the ED, time from admission to first medical attention, and SAIP opinion survey results. Descriptive analysis expressed as mean ± standard deviation (for quantitative variables) and as absolute values and percentages (for qualitative variables). For bivariate analysis we used Student's t test for continuous variables and chi-square test for dichotomous variables or Fisher's exact test and Yates correction as the nonparametric test. Differences with a p value < 0.05 (95% CI) were considered statistically significant. Data processing was performed using SPSS 19.0 for Windows.

Table 1. Catalogue of ED service indicators established in 2009

Activity Indicators	Care process quality indicators	Outcome quality indicators
Nº emergencies attended	Delay before 1st medical attention	Absolute nº ED admission
ED workload	Delay triage - 1st medical attention	% urgent admissions
	Mean ED stay time	Emergencies transferred
	Mean ED stay time by specialties	Rate of revisits within 72 h
	% informatics discharges	Mortality rate
	Nº patients classified in triage	Nº patients referred Home Care Unit Nº deaths
	% patients classified in triage	Nº voluntary discharges
	Mean time admission - triage	Nº dropouts without being seen
	% patients classified in triage by levels	Nº patients admitted to Observation

Table 2. Procedures for organizing patient care, divided into 3 groups

A. General procedures in patient care	B. General procedures for management / logistics	C. Procedures related to attendance
– Welcome reception and patient classification	– Dispensation of treatments and management of ED pharmacy	– Radiographic examination
– Basic consultation	– Sterilization and cleaning of material	– Management of deceased patient bodies
– Attention of adult critical or level 1 patient	– Procedure for custody of belongings	– Voluntary discharge
–Attention of pediatric critical or level 1 patient	– Waste management	– Attention for women victims of domestic violence
– Patient care in the area of trauma-specialties	– Supply of sortable material, consumables, stationery and diagnostic material	– Exposure to infectious material
– Discharge/Admission of the patient	– Restocking and maintenance of care areas	– Admission of patients with hip fracture
– Pediatric patient care		– Chest pain unit
– Patient Care in the Observation Area		– Procedure for medical transport of patients
–Patient care in the area of general consultation		– Management of hem derivatives
		– Transfer of patients with limb amputation
		– Completion of legal injury report
		– Determination of blood alcohol levels
		– Social-medical attention of children and child protection
		– Laboratory Tests

RESULTS

During the 4 study years, 260,296 patients were attended (2013: 67,466 patients; 2008: 66,429 patients, 2014: 65,657 patients, 2010: 60,744 patients), 47.4% male and 52.6% female. Patient characteristics were similar and sex and / or age groups did not differ significantly between these periods. Of the 236 complaints received during the 4 years, 210 were included and 26 excluded (1 for not stating the reason for the complaint, 2 illegible, 23 only verbal). We observed a reduction in the absolute number of complaints and in the proportion of complaints with respect to total emergencies attended (Figure 1), with a linear trend chi-square value of 28.28 ($p < 0.001$) and a reduction of 27.2% in 2008 (59 complaints; 0.89 ‰), 40.7% in 2014 (48 complaints; 0.73 ‰), and 72.8% in 2010 (22

complaints, 0.36 ‰), compared to 2010 (81 complaints, 1.20 ‰) with no significant differences by sex ($p = 0.058$) and age ($p = 0.062$) of claimants between the 4 periods of the study. We also observed a reduction in the number all complaints for delay in healthcare delivery and in its proportion with respect to the total number of emergencies attended. Of the claimants, 59.2% were women and 40.7% men, mean age 38.9 years (16-91 years). In the analysis of reasons for making the complaint, 76.2% (160 complaints) were for delays in the care process, followed by dissatisfaction with internal organization norms (7.1%), lack of human resources (6.2%), and administrative errors (2.9%).In the time period analysis, we observed an increased number of complaints during the third quarter (July, August and September), accounting for 28.4% of complaints in 2010, 18.6% in 2008, 45.8% in 2009 and 54.5% in 2010. Monthly, there were more complaints in December 2010 (11 complaints), in February 2008 (15 complaints) and in August 2009 (13 complaints). No statistically significant association was observed between the busiest months and the number of complaints received ($p = 0.062$) (Figure 2). Mean ED stay time was similar ($p = 0.002$) during the study periods (4:11: 46 in 2010; 4:14:50 in 2008; 3:57:05 in 2009 and 3:41:00 in 2010), with no significant association with the number of complaints ($p = 0.58$). However, delay from admission to first medical attention reduced progressively and significantly ($p < 0.001$) in 2008, 2009 and 2010 (55 mines 40 sacks) with respect to 2010 (1 h 21 mines 30 sacks). After implementation of the quality program in 2008, complaints about delayed attendance decreased by 70.6% ($p < 0.001$) and there were no more complaints about lack of privacy ($p = 0.005$). Complaints about errors in the reception process decreased ($p = 0.025$) as did those related with accidents ($p = 0.017$), while complaints about lack of human resources and dissatisfaction with the internal organization norms increased (Table 3). Overall user satisfaction increased by 28.5% from 2010, progressively, with a range of 0 to 10: 6.22 in 2008, 6.74 in 2009 and 7.39 in 2010. The vast majority (95.7%) of patients responded that they would choose to return to the ED if they needed urgent attention. To the question "Do you think the ED service has improved in the last 2 years?" 88.4% responded affirmatively in 2013, 85.9% in 2008 and 88.5% in 2009.

DISCUSSION

Day after day, ED staff must handle workload pressure without reducing quality and efficiency. The fact that organizational improvements can be achieved with little additional costs, together with citizen demand, are potent reasons why the quality of care should be considered a strategic variable and a necessity for any ED management plan. The present study analyzed all complaints and opinion questionnaires from January 2010 to December 2013, in order to assess whether there has been a significant change since the implementation of a quality plan in 2010 and 2011.In the study period, the percentage of complaints was similar to that reported in the literature, despite differences in methodology17, 18. In contrast to other studies16, 17, our typical claimant was a young woman. This may be related with the increased proportion (5.3%) of women treated in our ED, compared to all emergencies for all ages. In the period's analysis, there was a trend towards a summer increase in the number of complaints which may be partly explained by an increase in population during the holiday period. However, more studies are needed to analyze the reasons and the exact variables which determine this increase in summer. Some winter months also showed an increase in complaints, which could be related with increased workload due to greater numbers of patients with respiratory disease17, 18. In our work, we would emphasize the following findings: on the one hand, we found a progressive decrease in the overall number of complaints and especially complaints about delays in the care process, the main reason for making a complaint17,19, with no significant differences in mean stay in the ED, and on the other hand, there were no longer any complaints about ED organization and safety, such as accidents in the center, lack of privacy and errors in the reception process but disagreement with the internal norms increased.

When considering patient satisfaction or dissatisfaction, not everything is centered on waiting time, but the integral care received. Thus, before implantation of the health care plan, the care process was disorganized, there was a lack of information, where each component worked in a unidirectional manner and training was generally based on personal interest and private initiative. With the implantation of the health care plan, it became organized, with specific lines of work performed conjointly and centered on the patient and the health personnel. Thus, the changes led to improvement in the quality of care and the subjective patient perception that the care process was transparent and organized during their stay in the ED, which explains the reduction in complaints about delayed attendance although there was no significant decrease in mean stay time. IN conclusion, complaints analysis and patient satisfaction surveys are useful tools to evaluate and monitor the quality of care, and a program of quality management such as that reported here is not only a tool for addressing deficiencies in the organization, but is the

way to achieve comprehensive emergency care, so that the patient receives optimal quality care in the ED and is also satisfied with the care process.

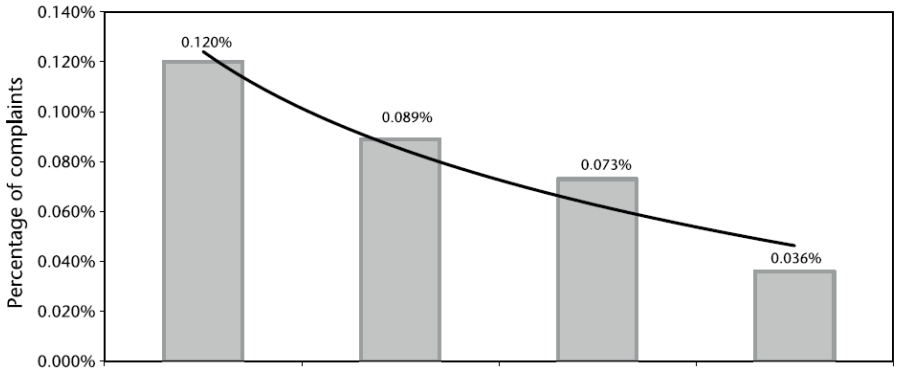

Figure 1. Percentage of complaints with respect to number of emergencies attended per study year, with a decreasing linear trend.

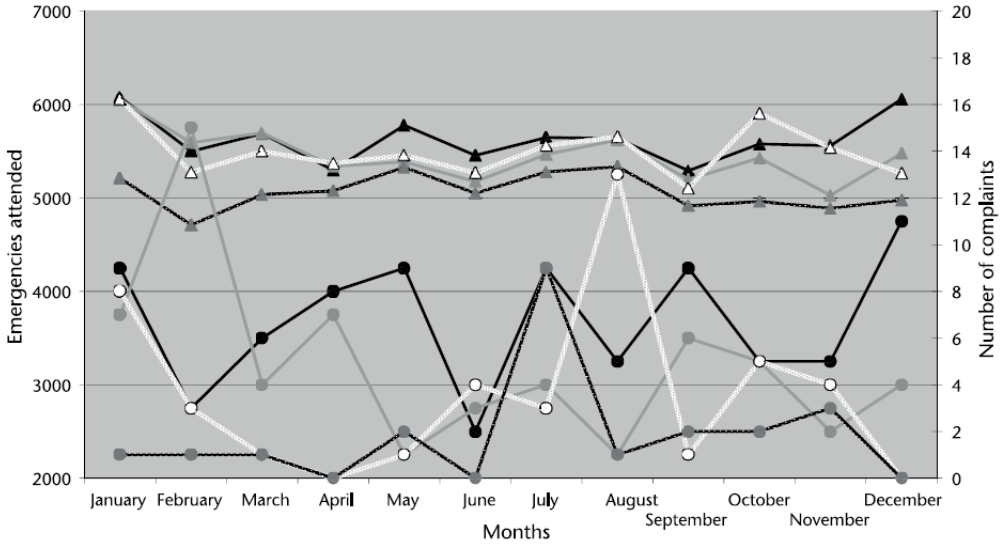

Figure 2. Relationship between the number of emergencies attended and the number of complaints, from 2010 to 2013.

შესრულებაში პროგრამა საგანგებო ერთეული ჯანდაცვის ხარისხის და მისი გავლენა

ანალიზი გავლენა პროგრამა ან გეგმა გააძლიეროს და გააუმჯობესოს შემთხვევაში ადმინისტრაციის საგანგებო ერთეული პერსპექტივა საჩივრების გავგზავნე და დაავადების მოხვდა ადამიანი კმაყოფილება სტანდარტი. მეთოდები: აღწერილობითი, პერსპექტიული დაკვირვება. დრო: იანვარი 2010 დეკემბერი 2013. ჯანდაცვის ხარისხის გეგმას განვითარების სრულფასოვანი გეგმა; კამპანია გაავრცელოს ინფორმაცია პაციენტის და პერსონალის უსაფრთხოება;მართვის სისტემის საფუძველზე პროცესებში; და პროცედურების მომზადების და განათლების, მათ შორის დაბალანსებული და შეფასების შედეგები. შედეგს ზომები:

საგანგებო სიტუაციების დაესწრო ყოველთვიურად, ნომერი პრეტენზიები და მიზეზები მათ, ნიშნავს ყოფნის საგანგებო სიტუაციათა დეპარტამენტი, დაგვიანებაზე მიღებას პირველად სამედიცინო ვიზიტი და მომხმარებლის კმაყოფილების კვლევა. შედეგები: სულ 210 პრეტენზიები იქნა შესწავლილი; 81 შეტანილ იქნა 2012 წელს, 59 წლის 2011 48 2010, 22, 2013 წელს დაგვიანებით მოტივირებული 76,19% პრეტენზიები; უთანხმოების შესახებ, ორგანიზაციული პროცედურების მოტივირებული 7.14%. უფრო პრეტენზიები მიიღო ზაფხულის თვეებში. მას შემდეგ, რაც პროექტი განხორციელდა 2009 წელს, პრეტენზია დაგვიანებით შემცირდა 73,53% და არ შემდგომი პრეტენზია ნაკლებობა კონფიდენციალურობის და ავარიების ფარგლებში საავადმყოფოში იქნა მიღებული. დასკვნები: პრეტენზიები ანალიზი არის სასარგებლო ინსტრუმენტი მონიტორინგის ჯანდაცვის ხარისხის.ჯანდაცვის ხარისხის მართვის პროგრამა მნიშვნელოვანია გაუმჯობესების სასწრაფო დახმარების გარეშე მომტანი დამატებითი ხარჯები

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