Original Article

Investigation of the Factors Affecting the Efficient Operation of the Emergency Department at the Paphos and Paralimni General Hospitals

Andri Efstathiou, RN, BSc, MSc, PhD
Emergency department, Limassol General Hospital, Cyprus

Mikaella Symeou, RN, BSc, MSc, PhD
Medical Ward, Nicosia General Hospital, RN, BSc, MSc, PhD

Eleni Jelastopulu, MD, PhD
Associate Professor, Hygiene Laboratory, Medical School, University of Patras. Patras, Greece

Dafni Kaitelidou, RN, MSc, PhD
Assistant Professor, Department of Nursing, University of Athens, Athens, Greece

George Charalampous, MD, MSc, PhD
Director in Emergency Department, Hippocratio General Hospital of Athens, Greece - Frederick University, Cyprus

Correspondence: Andri Efstathiou Makedonias 17b street, Paramytha, Limassol Cyprus. Email: andri_efstathiou@hotmail.com

Abstract

Background: The Emergency Department (ED) is the heart of the hospital because it is called upon to provide urgent medical and nursing care at all times to a large number of patients. Its basic competencies include the reception, rejuvenation, diagnosis and treatment of patients with a wide range of problems, including diseases, accidents and behavioural disorders, until they have been discharged or transferred for further care. However, it has been found that coordinating these variables is particularly difficult due economic crises, healthcare system inadequacies, the primary healthcare (PHC) structure, and a lack of proper management and coordination in the ED.
Objective: The aim of the present study was to investigate the factors that affect the smooth and efficient operation of the EDs in two state hospitals in Cyprus (Paphos and Paralimni), and to reveal any weaknesses in the PHC services or the emergency pre-hospital care structures.
Methodology: This was a quantitative survey conducted between March and May of 2016. Analog random sampling was applied as the sampling method. The Hospital Urgencies Appropriateness Protocol (HUAP), which consisted of four parts, was used as a research tool. 409 patients participated in this study.
Results: The analysis of the questionnaires showed that the greatest proportion of patients visiting the ED was < 45 years old, while 79.6% had public health insurance coverage and 62.6% were not economically active. In the HUAP classification, 80.2% had HUAP scores of 4–5 and could have been well served at their PHC centres.
Conclusions: These results suggest that unemployment, poverty and aphasia increase the number of patients in the ED. Although many of the patients could have been accommodated in their PHC centres, they chose the ED because they had more confidence in those services.

Key words: Emergencies department, emergency department malfunction, factors affecting the functioning of emergency department

Introduction

Internationally, healthcare systems set as a basic principle the development of proper and adequate emergency care at the right place, at the right time, and staffed appropriately to treat citizens requiring urgent medical care. Proper emergency care can save lives and greatly reduce the chances of permanent harm (Lambrou, 2005) one could argue that the emergency department (ED) is the heart of a modern hospital as well as the main gateway to patient healthcare systems, particularly in states where primary health care (PHC) services are inadequate. Overall, EDs are the point of interchange between outpatient healthcare and emergency hospital care (Charalampous 2010).

According to the European Society of Emergency Medicine (EUSEM), the ED aims to receive the revitalization of the diagnosis and treat patients with undifferentiated urgent and acute problems. The ED must cover the full range of diseases, injuries and behavioural disorders, and manage them until the patient is discharged or transferred to another clinic for further care (Askitopoulou 2009, Eusem 2009.

The ED invites all kinds of urgent cases, deals with real emergencies, and deals with any sudden disasters that may arise by influencing and altering the health indicators of a population, and thus, improving the quality of services provided in the field of urgent healthcare. The reliability and efficiency of each state's healthcare system can be judged by the functioning of their ED Charalambous 2010).

At the end of the year, it was found that despite the tremendous work that EDs do on a daily basis, 24 hours a day, a combination of factors seriously affected their efficiency and made access to for real urgency extremely difficult. Over the last few years, this has become an issue of great concern to the scientific community, especially for those who make decisions about healthcare systems. The changing socioeconomic conditions and persistent aging not only affect healthcare systems and ED functioning, but they also require new designs and modifications to healthcare systems. These modifications should provide better and more efficient care, as well as reduce the burden on the already limited resources available to the healthcare sector (Liaropoulos 2010). In particular, nine main factors influencing ED functioning and efficiency have been identified.

Globalization has a significant impact on the population health indicators, and the abolition of borders and aggravation of environmental problems have considerably aggravated the health situation (Kyriopoulos and Tsiankou 2009). In addition, the financial crisis and the financial situation of the patients have affected both the health indicators of the population and the health system, and thus, the ED in the demand for public services. The increase in the demand is mainly because patients are turning to where they are provided with public insurance to cover the costs (World Health Organization, WHO 2009, Maliarou and Sarafi 2012). At the same time, persistent aging is one of the main problems faced by emergency care services. In particular, according to Dowing and Wilson (2005, Lowenstein et al. (1996), Lim et al. (2000) and elderly people are more likely to visit the ED, use ambulance services, and ultimately, require inpatient care.

Based on the above factors, there has been a further increase in the overcrowding phenomenon, in which the number of patients in question far exceeds the capacities of the human potential of the ED. Moreover, it was found that beyond crowding, when EDs are flooded with non-invasive incidents, the chances of misdiagnoses and low-quality care are increased. Several screening systems have been developed to categorize and prioritize patients. In this way, a presenting case can be immediately identified as a matter of urgency and, at the same time, the time to deal with it is noticeably reduced (Imperato J et al. 2012, Jin et al 2010.). According to the patients, serious problems and inadequate PHC structures, as well as a lack of confidence and dissatisfaction with these services, often force them to resort to the ED for treatment (Padgett et al. 1992).

The ED is part of the information technology department, with specific information to be supported since the benefits of its presence are crucial. The absence of information technology support affects the reliability, speed and quality of the services provided (Sarivougioukas et al. 2008). At the same time, serious administrative and understaffing problems can make an ED inadequate in providing emergency, medical and

nursing care. Combined with these, the fear of litigation forces many modern physicians to abuse laboratory tests provide excessive prescriptions and adopt behaviours often referred to as defensive medicine Tsimtsiou Z. & Kaltsos K. (2011)

Methodology

Sampling Method

This quantitative survey was carried out in two EDs in Cyprus state hospitals (Paphos and Paralimni), with a final sample of 409 patients who visited the EDs during the period from March through May of 2016. Systematic proportional random sampling was applied as the sampling method. In particular, the patients were selected based on systematization, after each second patient who was admitted to the ED between 8:00 am and 8:00 pm on a weekly basis, except for weekends, while the PHC were in operation. Thus, all of the patients were equally likely to be selected for the sample. The sampling was proportional, according to the Ministry of Health statistics for the annual visits to the ED per province. Those patients who came in through the rehab room were excluded, but not those who arrived by ambulance.

Research Tool

The Hospital Urgencies Appropriateness Protocol (HUAP), which was weighted in Greek by Dr Kaitelidou who gave written consent for its use, was the main research tool used. The first part of the questionnaire included the demographic characteristics of the patients, and the second part was information for the screening form. Part C was the first section of the HUAP that included criteria for the justifiable use of the ED. If no criteria were found in part C, then part D related to the unjustified use of the ED, which was added to indicate the reasons why a patient preferred the ED.

Data Collection and Analysis

The first three parts of the questionnaire were supplemented by triage nurses, and when no justifiable use criteria were found, the researcher asked these patients to complete the second part of the questionnaire (Unreasonable Use of EDs). The data analysis was performed with the IBM SPSS Statistics for Windows, Version 21.0 the correlation investigation was conducted with the chi-squared test, and the level of statistical significance was set as $p<0.05$.

Ethical Considerations

Before this research began, all of the necessary approvals from the Cyprus Bioethics Committee, the Privacy Commissioner and the relevant Ministry of Health contacts were secured. Approvals were provided by the nursing administration and the EDs, as well as the patients who participated in this research.

Results

The survey sampling frame included 550 questionnaires for both provinces. Of these, 409 questionnaires were answered, and a response rate of 74.4% was recorded. The sample consisted of 300 patients from the Paphos ED (73.3%) and 109 patients from Paralimni ED (26.7%); in terms of“in terms of gender the sample sizes were relatively equal. With regard to the age distribution, 52.9% of the total sample was under 45 years of age, and regarding education, the highest percentage of patients were high school graduates (33.2%), followed by patients with no education (21.4%). In addition, 74.1% of the patients who arrived at the ED had Greek Cypriot citizenship, 79.6% responded that they were covered by public health insurance, and only 3.5% of the patients had private health insurance. Moreover, 62.6% of the respondents were part of the non-economically active population (unemployed, minors and migrants) (Table 1).

In the screening scale categories, it was found that 8/10 patients (80.2%) were rated 4–5, of which 63.5% were considered by the triage nurses to be eligible for PHC centre treatment. One specialist deemed that 15.3% of the patients needed to be seen in the ED. The mean time spent in the ED was 1 hour and 15 minutes, with a standard deviation of 45 minutes. With regard to the justifiable use of the five categories of the criteria, the most prevalent criteria are shown in the table 2 below.

Table 1. Demographic and Social Characteristics of the sample

	N	%
City		
Limassol	501	55.1%
Paphos	300	33.0%
Paralimni	109	12.0%
Gender		
Female	434	48.5%
Male	461	51.5%
Age		
< 45	463	52.2%
46 – 60	147	16.6%
60+	277	31.2%
Citizenship		
Greek Cypriot	600	77.0%
Other	179	23.0%
Public Social Security Coverage		
Yes	694	80.9%
No	164	19.1%
Privatw Social Security Coverage		
Yes	23	2.8%
No	799	97.2%
Working status		
Active	290	34.6%
Unenployed	549	65.4%
Area of residence		
Urban area	498	60.0%
Rural area	332	40.0%

Table 2: Seriousness Criteria, Treatment criteria, Diagnostic criteria, Criteria for patients coming in on their own initiative

Seriousness criteria	Blood pressure changes (3.7%)	Persistent fever over five days (3.4%)
Treatment criteria	Intravenous drug or liquid administration (34.5%)	Oxygen administration (7.8%)
Diagnostic criteria	Screening examinations (42.3%)	Laboratory examinations (30.1%)
Criteria for patients coming in on their own initiative	Had an accident and should be examined (12.2%)	Symptoms suggestive of a major emergency (11.2%)

Table 3. Appropriate visit of Emergency Department

			Appropriate Visit				
			No	**Yes**	**Total**	**X^2**	**p value**
District	**Limassol**	**N**	147	354	501	169.313	0.000
		Expected N	196.0	305.0	501.0		
		%	41.3%	63.9%	55.1%		
	Pafos	**N**	202	98	300		
		Expected N	117.4	182.6	300.0		
		%	56.7%	17.7%	33.0%		
	Paralimni	**N**	7	102	109		
		Expected N	42.6	66.4	109.0		
		%	2.0%	18.4%	12.0%		
Gender	**Female**	**N**	171	263	434	0.332	0.565
		Expected N	166.8	267.2	434.0		
		%	49.7%	47.7%	48.5%		
	Male	**N**	173	288	461		
		Expected N	177.2	283.8	461.0		
		%	50.3%	52.3%	51.5%		
Age	**< 45**	**N**	190	273	463	11.8	0.003
		Expected N	176.4	286.6	463.0		
		%	56.2%	49.7%	52.2%		
	46 - 60	**N**	65	82	147		
		Expected N	56.0	91.0	147.0		
		%	19.2%	14.9%	16.6%		

		N	83	194	277		
	60+	**Expected N**	105.6	171.4	277.0		
		%	24.6%	35.3%	31.2%		
Social Security		**N**	245	450	695	13.259	0.000
	Yes	**Expected N**	265.4	429.6	695.0		
		%	74.7%	84.7%	80.9%		
		N	83	81	164		
	No	**Expected N**	62.6	101.4	164.0		
		%	25.3%	15.3%	19.1%		
Citizenship		**N**	238	362	600	0.072	0.788
	Greek Cypriot	**Expected N**	236.5	363.5	600.0		
		%	77.5%	76.7%	77.0%		
		N	69	110	179		
	Other	**Expected N**	70.5	108.5	179.0		
		%	22.5%	23.3%	23.0%		

As for the correlations made between justified use and the gender, age and occupational status, no statistically significant correlations were found. However, there was a statistically significant correlation between the attendance province and the justifiable use of the ED Specifically, 67.3% of the patients in the Paphos hospital were unjustified in their use (p=0.000). In addition, a positive correlation was found between legitimate use and the existence of insurance coverage, in that 66.3% of the uninsured patients made inappropriate use of the ED (p=0.002). The analysis of the results also found that those patients living in urban areas recorded higher rates of inappropriate use that those living in rural areas (72.4%) (p=0.000). Moreover, the education level was also positively correlated with the unjustified use of the ED. The post-secondary school and third grade school graduates often made unjustified use of the ED at rates of 65.9% and 68.7%, respectively (p=0.000) (Table 3).

Discussion

The percentage of patients responding to the survey was 74.4%. According to Mercouris et al. (2008) if the response rate of the sample is low (below 65–70%), it is necessary to investigate the causes and characteristics of the individuals who were missed because they may be related to the concept under study (Mercouris et al. 2008.)

This research has shown that the problems faced by emergency hospitals in Cyprus seem to be of great concern to patients who want to find solutions soon enough to enjoy higher quality services without time-consuming procedures. One of the results that seems to be consistent with several studies is the fact that half of the patients

who participated in this study were < 45 years old. Those patients are in the most productive phase of their lives, and probably due to their work, are necessarily addressed in the ED rather than PHC facilities, which are not open 24 hours a day. In addition to a survey conducted in 2006 in France, while investigating the reasons why non-urgent patients choose EDs rather than primary care services, it was found that the average age of the patients who had inappropriately visited EDs was 38.3 years old. In addition, 67.8% were employees that had public health insurance, while only 9% had private health insurance Durand et al. 2012

Based on the analysis of the results of the present study, one out of three patients who participated in the research was a high school graduate, with three out of four having Greek citizenship (74.1%). In a survey by Fan et al. (2011), it was found that individuals with an education level higher than high school were significantly more likely to visit the ED. Although foreigners and third-country nationals appear to use the ED quite often, research has shown that those who abuse or make undue use of the ED are Greek Cypriots.

A survey conducted in Italy designed to study and analyse visits to the ED, in terms of the characteristics, access, management procedures and outcomes, based on the citizenship of the patients, found that the under-utilization of PHC services and the use of the ED for non-emergency situations is a problem affecting all nationalities, including local citizens. The duration of the ED stay and the correlation between the level of urgency and the priority of the visit during the screening process were similar across all groups of citizens. Overall, illegal immigrants had more frequent visits to the ED than the other groups Buja et al. 2013

Moreover, 323 of the 409 patients (79.6%) stated that they had health insurance at a similar rate stating that safety was covered by public insurances. According to a survey by Renne et al. (2012), uninsured adults were more likely to visit urgent care facilities and EDs because they were not served elsewhere (61.6%), compared to those adults who had private insurance (38.9%) or those covered by a public health plan (48.5%). In the present survey, only 3.5% said that they had private health insurance.

Of the 409 patients who participated in the current survey, 253 (62.6%) reported that they did not work, and 181 (45%) were located in urban areas. A survey carried out by Rajpar et al. (2000) to determine the reasons for choosing between a PHC and the ED in patients with minor health problems found that out of the 102 patients who visited the ED, 62% were unemployed. It was also revealed that Caucasians and Asians were more likely to visit the ED with the exception of the PHC hours ($p<0.01$), and the unemployed were also more likely to visit the ED (70%).

It was found that 55% of the patients visited the ED between 7:00 am and 4:00 pm, with almost all of them arriving by private vehicle (only 2 patients used the ambulance service). Previously, Pereira et al (2001). found that 5,252 patients (90.4%) visited the ED between 8:00 in the morning and midnight, with only 9.6% visiting after midnight. At the same time, the survey found that these visits occurred most often during the day (84.7%). In a survey conducted in Israel by Bashkin et al. (2015), it was found that the highest percentage of patients recorded in the ED was between 07:00 and 15:00, and that 45% expected more than 1 hour for the first examination by a physician. In addition, Sempere S et al. (2001) found that only 6.94% of the patients were transported via an ambulance, although there is a predominant view that the ambulance service is abused in order to bypass the screening process and the long wait for examinations in the ED.

With regard to the grading scale categories to determine treatment priorities, it was found that eight in ten patients were classified in categories 4–5 (80.2%). The overwhelming majority of patients who underwent ED examinations did not need to be evaluated by a specialist. Of the 53 admitted patients (12.9%), only three of them remained in the ED due to a lack of beds. Moreover, doctors in their PHC centres could have examined 63.5% of the patients who visited the ED.

In a study conducted in Saudi Arabia determining the reasons why patients with non-urgent conditions visited the ED, the patients who were included in categories 4 and 5 during the screening process were questioned about why they preferred the ED. Most of the respondents (63%) stated that they did not have a fixed-term healthcare provider,

while 62% responded that they were visiting the ED because they would be cared for in the same day, and 62% were because of the ease of access. Two-thirds of the patients who participated in this research believed that their health status was far more difficult than was determined by the screening nurses (Alyasin & Douglas 2013).

The average patient stay in the ED was one hour and fifteen minutes, with a standard deviation of forty-seven minutes. In a survey by Karaca et al. (2012), it was found that the average duration of the visits varied considerably with regard to the time of day, day of the week, patient volume, patient characteristics, hospital characteristics and characteristics of the area. Specifically, this survey found that the average duration of the visit was 195.7 minutes. In the Bashkin et al 2015 survey, it was found that the length of the patient stay showed a statistically significant difference between the patients admitted (544 min) and the patients who were discharged (291 min). In addition, it was revealed that the shift time for the doctors and nurses was associated with increasing the patient stays in the ED.

In a survey conducted by Lydakis ET all (2014) regarding the role of the low-risk cases, it was found that with its application, the waiting time of the patients decreased and the crowd phenomenon was reduced. At the same time, it helped to provide care for patients with immediate emergencies. The results of the research by Durand et al. (2012) agree with this research, since the patients seemed to be choosing EDs instead of the PHC centres because they have direct access to imaging and laboratory tests, and generally, all of the services are concentrated in the same place.

With regard to patients who arrived at the ED on their own initiative, the most frequent reason was being involved in an accident and needing to be treated in the ED (12.2%, 50 patients), followed by patients with symptoms suggestive of extraordinary disease (e.g., chest pain, sudden onset dyspnoea; 11.2%). In the research by Durand et al. (2012), 79.3% of the respondents visited the ED without having been examined by a medical practitioner at a PHC centre, while only 16.1% were assigned to a PHC centre, and 4.6% were patients treated for social reasons or via a police escort.

Conclusions

The ED aims to provide urgent nursing care to all patients, as well as the management of emergencies, such as mass disasters, earthquakes, malicious actions and plagues. Like all international/transnational societies, the EDs in the Cyprus Public Hospitals faced a wide range of problems, including the economic crisis, globalization and the persistent aging of the population, which have led to poverty, immigration and a shift in the turn of citizens to PHC services, which in turn are unable to respond, mainly because of financial constraints.

The results of our research revealed that the majority of patients visiting the ED were < 45 years old, and mainly visited the ED in the afternoons, evenings and weekends. This could be attributed to the fact that they were at a productive working age, and in order avoid a loss of work hours, chose a unique way to avoid the PHC centre. This rings alarm bells for the healthcare system policy makers, since only through upgrading the healthcare system, and above all, upgrading PHC services, will citizens be able to enjoy truly effective and quality health care. Extending the working hours of PHC services, as well as eliminating the waiting lists, could lead to increased visits to these facilities and reduced visits to the ED, thus effectively addressing the international phenomenon of overcrowding. It was found from the results of this survey that citizens show greater confidence in urgent care than in PHC centres, and therefore, choose to visit EDs.

In addition, a significant proportion of patients responded that they were unaware of the outpatient services available. It appears that as a state, it is necessary to inform the citizens, but at the same time, train them about when to choose the PHC centre and when to choose the ED and ambulance services.

Despite the fact that the majority of the patients who participated in this research had high education levels, they did not seem to make appropriate ED visit choices, and it seems once again that the state does not place particular emphasis on educating its citizens on this issue. Several countries have introduced a financial burden on patients who make unjustified use of the ED to solve the serious problem of overcrowding.

Despite the fact that there are trained staff members (nurses) in each of the EDs in Cyprus, the lack of proper planning and the ever-increasing flow of incoming patients has led to long patient waiting times, unnecessary suffering and a reduced sense of satisfaction from the patients for the services provided. As well as on, the part of the providers' reduced work satisfaction.

The establishment of a "FAST TRUCK" within the ED has been increasingly gaining ground in developed healthcare systems as more and more citizens arrive at the ED seeking PHC services. This brings the multifaceted benefits of serving patients with minor health problems and separating them from people with immediate life-threatening situations that need to be directly integrated into the ED for medical examination.

The Republic of Cyprus, in view of its efforts to implement the "General Health Plan", should upgrade its PHC structures, which will become the backbone of the new healthcare system, and upgrade its emergency services. Only then will it be a successful, new healthcare system. A large percentage of the patients also replied that they did not work, so the state must secure its unemployed citizens and all of those who are at a disadvantage in the wake of the economic crisis. The welfare state must take measures to ensure that its citizens enjoy high-quality healthcare services regardless of economic background.

In this survey, 48.9% of the visits to the ED were legitimate (200/409 patients), while 51.1% could have been well served by PHC services. In addition, it was found that most of the citizens relied on public insurance coverage, with only 3.5% having private health insurance. It seems that citizens rightly require the medical care that the state has to provide, but they are faced with a chaotic healthcare system with hermetically closed doors and long waiting lists for doctors or imaging examinations. Therefore, dozens of patients arrive at the ED daily, which is the only gateway for most patients into the healthcare system.

References

Alyasin, Ali & Douglas, Clint (2014) Reasons for non-urgent presentations to the emergency department in Saudi Arabia. International Emergency Nursing, 22(4), pp. 220-225

Askitopoulou E. (2009) Emergency department: organization and development. Medical Department, University of Crete.

Bashkin O., Caspi S., Haligoa R., Mizrahi S. & Stalnikowicz R. (2015) Organizational factors affecting the length of stay in the emergency department: Initial observational study. Isr J Health Policy Res. 2015 Oct 15;4:38. doi: 10.1186/s13584-015-0035-6.

Buja A., Fusco M., Furlan P., Bertoncello C., Baldovin T., Casale P., Marcolongo A. & Baldo V. (2013) Characteristics, processes, management and outcome of accidents and emergency departments by citizenship. Int J Public Health 59(1):167-74.

Charalambous A. & Tzitsis I. (2010) The impact of globalization on health and the development of a supranational regulatory framework. Archives of Hellenic Medicine 27(1):106-112.

Charalambous G. (2010) Organization and operation of EDs and standard on-call standards, Athens, 2010. Accessed date: www.ygeianet.gr/box/cal/19678.doc

Downing A. & Wilson R. (2005) Older people using accident and emergency services" Age and aging 2005

Durand A.C., Palazzolo S., Tanti-Hardouin N., Gerbeaux P., Sambuc R. & Gentile S. (2012) Nonurgent patients in rational departments: rational or irresponsible consumers? Perceptions of professionals and patients. BMC Res Notes 5:525.

European Society for Emergency Medicine (EUSEM). (2009) Policy statement. September 2009.

Fan L., Shah M.N., Vejie P.J. & Friedman B. (2011) Factors associated with emergency department use among rural elderly. J Rural Health 27:39-49.

Imperato J., Morris D.S., Binder D., Fischer C ,Patrick J , Sanchez LD , Setnik G (2012) Physician in triage improves emergency department patient throughput. Internal and Emergency Medicine 7(5):457-462.

Jin H., Han D., France J., Levin S.R., Jones I.D., Storrow A.B. and Arousky D. (2010) The effect of physician triage on emergency department length of stay. The Journal of Emergency Medicine 39(2):227-233.

Karaca Z, Herbert S Wong, Ryan L Mutter. (2012) Duration of patients' visits to the hospital emergency department *BMC Emergency Medicine*2012

Kyriopoulos I. & Tsiankou B. (2009) the impact of the economic crisis on health and medical care. Archives of Hellenic Medicine 27(5):34-840.

Lambrou P. (2005) Department of emergencies. Organization and operation. Athena. Mediforce publications. Management and Health Economics.

Liaropoulos L. (2010) Organization of health services and systems volume A. Publications Beta, Athens, Greece.

Liaropoulos L, (2010) Organization of health services and systems. International health systems, volume B. Publishing B, Athens, Greece.

Lim K.H. & Yap K.B. (2000) the presentation of elderly people at an emergency department in Singapore. Singapore Med J 40:742-744.

Lowenstein S.R., Crescenzi C.A., Kern D.C., Steel K. (1996) Care of the elderly in the emergency department. Ann Emerg Med 15:528-535.

Lydakis X., Patramanis I., Lavrentakis K., Karavitakis M. & Neoporostos I.I.I. (2014) Emergencies, the role of the low-risk case management department. Greek Medical Records 31(3):336-341.

Malliarou M. & Sarafis P. 2012. Economic crisis. How to impact citizens' health and health systems. Accessed date: http://www.vima Asklipiou. 1(1): 202-212.

Malliarou M., Sarafis P. & Zyga S. (2009) Quality of care in ED, Asklipios 2009;8(1):25-40

Mercouri A., Papathanassoglou E., Pistolas D., Papagiannaki B., Floros F. & Lemmonidou X. (2003) Staffing and organization of nursing care in cardiac intensive care units in Greece. Eur J Cardiovasc Nurs 2:123-129.

Merkouris, A.B. (2008) Nursing Research Methodology. Ed. GREEK. Athena

Padgett D.K. & Brodsky B. (1992) Psychosocial factors influencing the non-urgent use of the emergency room: A review of the literature and recommendations for research and improved service delivery. Social Science and Medicine 35(9):1189-97.

Pereira S, Oliveira e Silva A, Quintas M, Almeida J, Marujo C, Pizarro M, Angélico V, Fonseca L, Loureiro E, Barroso S, Machado A, Soares M, da Costa AB, de Freitas AF.(2001) Appropriateness of emergency department visits in a Portuguese university hospital. Ann Emerg Med. 2001 Jun;37(6):580-6

Rajpar S.F., Smith M.A. & Cooke M.W. (2000) Study of choice between accident and emergency departments and general practice centers for out of hours primary care problems. J Accid Emerg Med 17(1):18-21.

. Sarivougioukas I, Vangelatos A, Katrava X. (2008) "Emergency Situations and Information Support" Greek Medical Records

Sempere-Selva T, Peiró S, Sendra-Pina P, et al. Inappropriate use of an accident and emergency department: magnitude, associated factors, and reasons—an approach with explicit criteria. *Ann Emerg Med* 2001; 37:568–579.

Tsimtsiou Z. & Kaltsos K. (2011) Contact doctor-patient and medical mistakes. The role of anthropocentric medicine in reducing disputes. Arch El Medicine 28:272-276.

Vaggelatos I. & Sarivougiyakis I. (2001) Hospital information system: Necessary infrastructure in the modern hospital. Medicine 80:210-216.

World Health Organization, WHO. (2009) Health and financial crisis: A complex diagnosis. Bull. World Health Organ 87:1-80.

WHO. (2009-b) The financial crisis and global health: A report of a high-level consultation. World Health Organization, Geneva, Switzerland.