

EMERGENCY DEPARTMENT COVID-19 RELATED CHALLENGES

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Abstract: Emergency departments are one of the most overwhelmed structures into healthcare system. They are the important, in reality the lifesaving, link between the pre-hospital and hospital patient management. Majority of the patients are considering the emergency department as the medical asset of first choice, when their or the health of their relatives and love ones is threatened. The COVID 19 pandemic has affected both the prehospital and hospital parts of the healthcare system. The pandemic impact on the emergency departments could be assessed at least as greater as the one to the established COVID departments. The emergency departments have to be considered as the frontline at the COVID 19 battlefield.

The aim of this study is to analyze some COVID 19 pandemic related challenges that have impact on emergency department operability.

Materials and Methods Both descriptive and comparative methods were applied for analyzing the most frequent challenges the emergency departments managers and personnel have to overcome during the pandemic. In order to reveal the most frequent concerns among the medical specialists of the emergency department of University hospital "St. George" Plovdiv, the survey regarding the challenges related to the COVID 19 threat was conducted in the period October-November 2020. Into the survey participated all 56 medical doctors, nurses, sanitary attendants and stretcher bearers working at the emergency department. Medics were asked to evaluate (using the modified Likert scale) the impact of the mitigation measures implemented for addressing the concerns that were identified into another survey conducted June-July 2020. The results of the answers of the two surveys are consequently analyzed for define the main challenges that have to be addressed by the managerial body in order to alleviate the physical and psychological impact on the medics due to the work into the harmful environment.

Results and discussion Performed analyses of the survey results have highlighted a myriad of issues that have to be addressed by the emergency department manager in order to maintain the required high level of efficiency and high level of readiness, preparedness into the extremely fluid, flexible and unpredictable situation.

Emergency departments are always on 24 hours/7 days a week working schedule, ready to respond to any emergency. What has changed into the pandemic is that the routinely occurring daily struggle for saving the life and preserving the health of the patients at life threatening conditions during the pandemic is aggravated by the imminent threat for every single medic to become infected and/or to become a vector for spreading the biological damaging factor. This threat is requiring specific organization and logistic for assuring the effective prevention. Another demand related to the prevention is the need for allocating particular individual protective equipment changing and biologic waste management.

Changes into planned shift workflow could be required also from possible medical specialist's illness, or because of the need some of the staff to be engaged with COVID 19 patient management, when there is an urgent demand for life saving of non COVID 19 patient.

Establishment and staffing of room for simultaneously treating infected and non infected patients with life threatening conditions is also serious challenge the emergency department managers are facing into the pandemic.

The analyses of the triggered by the pandemic changes into the emergency department workflow are basis for the noted into the conclusions recommendations for planning focused emergency department organizational and structural tuning.

Keywords: COVID 19, Emergency Department, Emergency Department Manager, Emergency Management

1. INTRODUCTION

Emergency medicine as an independent medical specialty could be assessed as a newly established one. The first medical doctors dedicating entire their practice and time only to the patients at the edge between the life and death started work around 50-es of the previous century. The first established programs for training and postgraduate specializations. residency could be traced back no longer than 50 years. (1) But if we analyze the medical art objectives and tasks it could be said that, in reality, the medicine as a science, practice, art started its development because of the need of the emergency medicine. Even into the pre-history our pre-predecessors were trying to save the life of their relatives, were making attempts to alleviate the suffering and to prevent the residual disability. And

these are the still in place, the remaining ultimate goals of the contemporary emergency medicine. Looking throughout the records left by the ancient medical professionals we easily could underline the main challenges they were facing - saving the life of the one they were asked to visit. What is more, majority of the population was looking for medical support only when the life of their relative was seriously threaten. Of course, the first emergency medicine procedures were derived by the military medicine, obviously, because of the large amount of experience that was gained by the medics through the uncountable wars and battles. With the development of the transportation means and with the industrialization the number of the casualties requiring urgent life-saving and life-keeping medical support increased dramatically into the first decades of the 20-th century. The growing number of events and patients in need of emergency medical attendance led to establishment of medical structures ready to respond to these demands, these structures evolved into the well-known nowadays emergency departments. Contemporary healthcare systems are heavily relying on the emergency services and to the emergency departments in particular. They are the those that are attending the critically, severely affected by the disease or trauma patients. It could be undoubtedly stated that the emergency departments are one of the most overwhelmed structures into healthcare system. They are the important, in reality the lifesaving, link between the pre-hospital and hospital patient management. Majority of the patients are considering the emergency department as the medical asset of first choice, when their or the health of their relatives and love ones is threatened. The population is confident that into the emergency departments they will receive the adequate, qualified and specialized medical aid in a timely manner. This belief leads to the every year recorded increase in a number of the patients arriving at emergency departments looking for medical support not only when the life is under imminent threat, but also for routine consultation. As the emergency medical teams are supposed to exclude the life and disability threat, they are forced by the patients to perform the examination, thus becoming engaged into non emergency medical assistance. This is one of the explanation of the growing annually overwhelming of the emergency departments.

The COVID 19 pandemic has affected both the prehospital and hospital parts of the healthcare system. (2-5) The imposed restriction on movement, impeded and jeopardized the routine medical calls and home visits. In Bulgaria for long periods of time the planned visits and hospital admittance, as well surgical and diagnostic procedures were prohibited in attempts to decrease the burden to the overstretched by the requiring hospitalization infected with COVID 19 hospital system. These restrictions along with the almost established practice of majority of population to seek medical aid first at emergency departments are the explanation of the recorded increased patients flow to these structures. Has to be noted that most of the hospitals in Bulgaria, as well all over the world, have transformed the emergency departments as the entry point due to the imposed almost regularly restrictions. (6-9) The pandemic impact on the emergency departments could be assessed at least as greater as the one to the established COVID departments. The emergency departments have to be considered as the frontline at the COVID 19 battlefield. (10,11) **The aim** of this study is to analyze some COVID 19 pandemic related challenges that have impact on emergency department operability.

2. MATERIALS AND METHODS

Both descriptive and comparative methods were applied for analyzing the most frequent challenges the emergency departments managers and personnel have to overcome during the pandemic. In order to reveal the most frequent concerns among the medical specialists of the emergency department of University hospital "St. George" Plovdiv, the survey regarding the challenges related to the COVID 19 threat was conducted in the period October-November 2020. Into the survey participated all 56 medical doctors, nurses, sanitary attendants and stretcher bearers working at the emergency department. Medics were asked to evaluate (using the modified Likert scale) the impact of mitigation measures implemented for addressing the concerns that were identified into another survey conducted June-July 2020. The results of the answers of the two surveys are consequently analyzed for define the main challenges that have to be addressed by the managerial body in order to alleviate the physical and psychological impact on the medics due to the work into the harmful environment.

Results and discussion The first performed survey was short and simple, as it was designed as a preliminary one. The respondents were asked to provide their answers to the following questions:

1. Do you feel that the emergency department is under the impact of the COVID 19? If the answer is positive the respondent was asked to make further clarification:
2. List the most affected activities
3. Do you feel physical impact of the COVID 19 pandemic? If the answer is positive, please list what cause this impact
4. Do you feel psychological impact of the COVID 19 pandemic? If the answer is positive, please list what cause this impact
5. Who has to perform mitigating measure in order to alleviate the COVID 19 impact?

Received and analyzed answers prove undoubtedly the significant impact on both physical and psychological status of the medics. Almost 100% (n=54, 96%) of the emergency department staff have responded positively on the first question.

Answers related to the second questions again present high level of agreement among the survey participants:

Triage is listed as a primary affected activity by 50 medics (90%), followed by the delay into the consultations 48 (86%) and the intra-hospital patients' transportation 71% (n = 40)

On both 3-rd and 4-th questions 100% of the participants gave positive answer.

Regarding the causes with impact on physical status the increased number of patients and the changes into the duty shifts rosters were listed by the majority of the medics - 93% (n = 52) and 88% (n = 49) respectively.

For causes of the psychological impact were listed the fear of becoming infected, the lack of efficient personal protective equipment, improper use of the protective equipment and the efficacy of the decontamination, as well the related to the mentioned above fear of infecting the family, elderly parents, relatives and friends. The number of the medics listing these causes differs between 45 (80%) till 56 (100%) for the last concern of becoming vector of the disease. Were listed and other causes as the impact of the self imposed isolation, especially into the first months of the pandemic) and the avoidance of contacts and close communication at work because of the fear to become infected.

On the fifth questions the respondents unanimously highlighted the shared responsibility between the hospital managerial council and everyone of the medical specialists for decreasing the risk level related to the biological damaging factor.

Based on the analyses of the received answers and the requirements of the increasing spread of the viral infection into country, several mitigation measures were implemented.

The second survey was conducted in order to assess the effectiveness of the implemented measures on the physical and psychological status of the emergency department medics. The survey questions are presented into the table 1.

1	Splitting the triage into pre-department triage and intra-hospital triage				
	Positive impact	Partially positive impact	No impact	Partially negative impact	Negative impact
2	Rotation of the medical teams on two weekly basis between the contaminated and the clean areas				
	Positive impact	Partially positive impact	No impact	Partially negative impact	Negative impact
3	Daily briefing on the personal protective gear and decontamination materials availability				
	Positive impact	Partially positive impact	No impact	Partially negative impact	Negative impact
4	Regular twice a week testing				
	Positive impact	Partially positive impact	No impact	Partially negative impact	Negative impact
5	Twice a day control of the effectiveness of the performed decontamination of the emergency department				
	Positive impact	Partially positive impact	No impact	Partially negative impact	Negative impact
6	Allocating fast corridors for the intra-hospital transfer for diagnostic and consultation procedures of the infected and suspected patients admitted to emergency department				
	Positive impact	Partially positive impact	No impact	Partially negative impact	Negative impact
7	Hourly update of the bed availability into COVID 19 and Intensive care units of the hospital and twice a day update of the COVID 19 and Intensive care bed availability into Plovdiv university, state, municipality and private hospitals				
	Positive impact	Partially positive impact	No impact	Partially negative impact	Negative impact

Table 1

Responses obtained through this survey present highly approval of the planned and implemented by the managers mitigation measures. Highest approval (90% positive impact and 10% partially positive impact) was found to the splitting of the triage and the allocations of the fast corridors for facilitating the intra-hospital transfer of the infected and suspected patients. The answers to remaining questions are presented by the diagrams 1 to 5:

**Rotation of the medical teams on two weekly basis
between the contaminated and the clean areas**

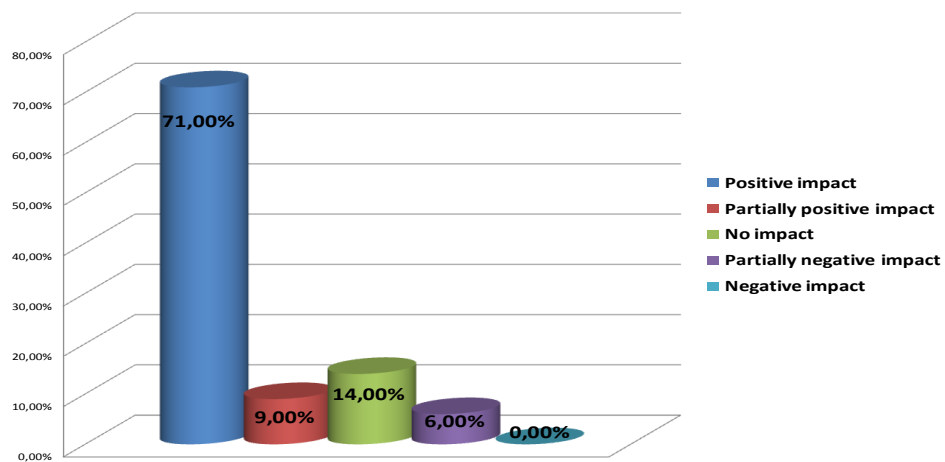


diagram 1

**Daily briefing on the personal protective gear and decontamination
materials availability**

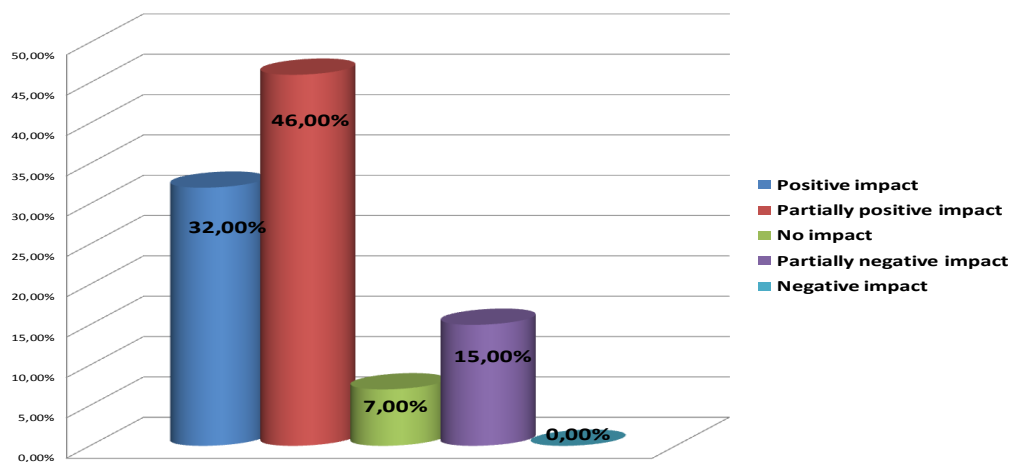


diagram 2

Regular twice a week testing

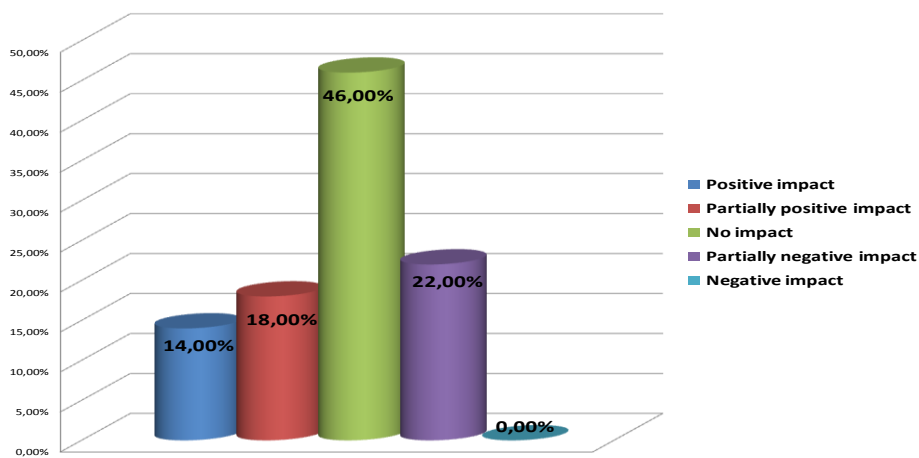


diagram 3

Twice a day control of the effectiveness of the performed decontamination of the emergency department

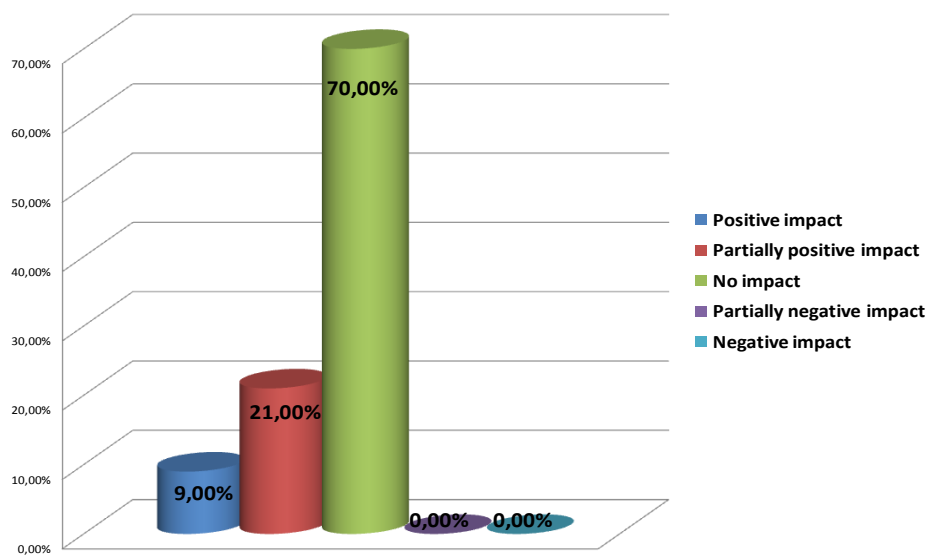


diagram 4

Hourly update of the bed availability into COVID 19 and Intensive care units of the hospital and twice a day update of the COVID 19 and Intensive care bed availability into Plovdiv university, state, municipality and private hospitals

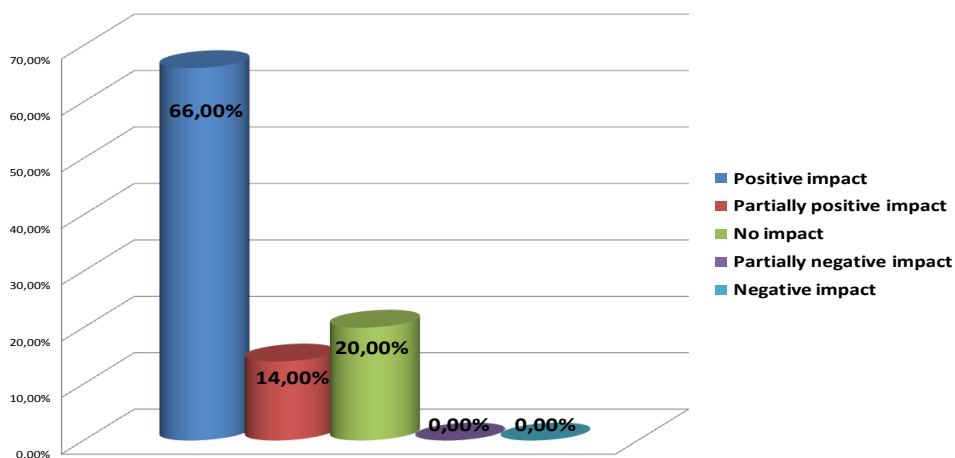


diagram 5

From the diagrams could be concluded that the majority of implemented measures are assessed by the medical specialists as with positive impact or partially positive impact on the negative consequences due to the COVID 19 pandemic. Only one of the measures is assessed as with no impact, even with partial negative impact. This assessment most probably is related to the requirement of regular testing of the personnel that is associated with some unpleasant feelings by more than 60% of the respondents. Other possible explanation of this result is related to the percentage of the fully vaccinated medics - close to 100% (only two of the medics were with not completed vaccination till the completion of the survey).

The second measure that is with almost no effect according the survey is the requirement for twice a day control of the effectiveness of the performed decontamination of the emergency department. Possible explanation of this result could be related to the constant patients influx into the department corridors, examination and expecting halls that is questioning the value of the control results, as the level of pollution of the surfaces could be changed into minutes after the control.

3. CONCLUSION

Conclusions that are highlighted by this study are related to the requirement of constant communication between the managers and operators into extraordinary situation - crises or disasters development. This communication will provide the managers with better understanding of the operational medical teams concerns that are the best possible source for planning, organizing and implementing the driven by the situation, but and by the medical staff needs, response and mitigation measures. If the implemented measures are addressing the personnel concerns, with high level probability they will enhance the emergency department medical specialists psychological and physical resistance, thus contributing to the faster and better adaptation to the novel and constantly changing challenges emergency hospital structures are facing throughout the pandemic and other crises and disasters.

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