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MEDICAL EDUCATION

Medical Training During the 2008/2009 Attack On Gaza

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التدريب الطبي خلال العدوان على غزة 2009/2008

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الملخص: التعليم الطبي خلال الحروب وفي مناطق النزاعات ليس بالأمر السهل. في السابع والعشرين من ديسمبر عام 2008 شنت اسرائيل حملة عسكرية ضد قطاع غزة استمرت لمدة 22 يوما. في نهاية هذه الحملة, أعلنت منظمات الإغاثة الدولية قطاع غزة منطقة منكوبة ووصفتها كمنطقة تعرضت لزلزال. تجربة الأطباء الفلسطينيين خلال هذا العدوان على قطاع غزة تستحق البحث والإهتمام بشكل خاص. في هذه الدراسة استكشفنا آراء الأطباء في برامج التدريب حول تجربة العمل خلال فترة العدوان على غزة. وقمنا بإجراء مسح لغالبية المدربين والمتدربين المشمولين في برامج التدريب لتخصصي الجراحة العامة والتخدير وذلك بمساعدة المجلس الطبي الفلسطيني في غزة واستخدام استبيان الكتروني. تم إجراء المسح على 71 طبيب وكانت نسبة الإستجابة العامة 67.6% . 84.3% من الأطباء المشمولين في المسح أكدوا على انقطاع الإتصال بينهم وبين إدارات برامجهم التدريبية خلال فترة العدوان. المدربين والمتدربين في كلا التخصصين أجمعوا على أن العدد الكبير للمصابين كان المشكلة الأساسية التي واجهتهم خلال العدوان. 71% من المستجيبين للمسح اعتبروا أن هذا العدوان كان محفزا لهم بشكل ايجابي لمزيد من العمل والتعلم. وفي الخلاصة تم استنتاج أن تجربة الأطباء الغزيين خلال فترة العدوان على غزة لا تختلف كثيرا عن تجربة الأطباء في مناطق نزاع أخرى. كما تم عمل بعض التوصيات على المستوى التعليمي والإداري من أجل تحسين عمل القطاع الصحي خلال فترات الطوارئ في قطاع غزة بشكل خاص والأراضي الفلسطينية بشكل عام.

ABSTRACT:
Background: Medical education during wars and in conflict zones is not straightforward. On December 27th, 2008, Israel launched an attack on the Gaza Strip which lasted 22 days. At the end of the attack, aid agencies reported that Gaza 'looks like an earthquake zone'. Doctors' experiences during the attack on Gaza deserve special attention and research.
Methods: In this study I explored perceptions of doctors in training about the work during the attack on Gaza. I surveyed nearly all trainers and trainees in training programmes of General Surgery and Anesthesia, with the help of the Palestine Medical Council in Gaza and by using an electronic questionnaire.
Results: 71 doctors were surveyed and the general response rate was 67.6%. 84.3% of the surveyed

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doctors reported that they had had no communications with their programme directorates during the attack. Trainers and trainees agreed that the large number of injuries was the main problem they confronted. 71% of respondents considered that the attack had had a positive impact on their willingness to work and learn more.
Conclusion & recommendation: Experience of Gazan doctors during the attack on Gaza has no significant difference from the experiences of doctors in other conflict areas. Some suggestions (administrative and educational) for future studies are recommended to improve the performance of the health sector in emergency situations in the Gaza Strip in particular and in the Palestinian Territories in general.

BACKGROUND:

'Hope for improving health and quality of life of Palestinians will exist only once people recognise that the structural and political conditions that they endure in the occupied Palestinian territory are the key determinants of population health', states the first report in the five reports of the Lancet Series 'Health in the Occupied Palestinian Territory' which was published in March 2009.[1] In these series they described in details the main issues about the health status and health services of the Palestinians under more than 60 years of Israeli occupation. A brief description of health status in Palestine, particularly in Gaza Strip and the current situation of the medical education and postgraduate medical training in Gaza Strip before the attack on Gaza are necessary in order to justify our study. The Palestinian territories consist of two distinct areas: Gaza Strip and West Bank including East Jerusalem. At present, all four main health-service providers (the Palestinian Ministry of Health, the UN Relief and Work Agency, non-governmental organisations, and the private medical sector) contribute to all areas of health care. Occupation and continuous dispute are worsening the hazards to health. Ongoing colonisation, fragmentation of communities and land, acute and constant insecurities, and routine violations of human rights are some of the stressors affecting health status and health services in the Israeli-occupied Palestinian territory.[1]

Eight universities and 15 faculties provide 85 health education programmes, 36 of them grant university degrees, and 22 grant diplomas, 13 grant master's degrees and 11 grant higher diplomas. However, these programmes do not meet the needs of the health sector due to shortage in some specialities and sub-specialities and the need to strengthen the accreditation system of medical programmes based on international standards.[2] Regarding medical education in the Gaza Strip; of the eight universities, two have recognised medical colleges providing first degrees in medicine. Al-Azhar University-Gaza was established in 1991 and opened its medical college in 1999. The Islamic University-Gaza was founded in 1978 and opened its medical college in 2006. Both schools consider the traditional medical curriculum as strategy for education in which basic sciences are taught separately from the clinical context. In an effort to enhance the quality of doctors and regulate specialization in the health sector; the Palestine Medical Council was founded in 1997. One of its tasks is to establish criteria for postgraduate training in specialization, continuing education and to find suitable programmes to control these issues by regular co-ordination with the Arab Board of Health Specialization. According to statistics published on the Palestine Medical Council web site, the number of doctors who obtained the board certificate in different specialities by exam in Gaza Strip through the period (2001-2009) was 39 doctors. Just four doctors had board certificate in General Surgery and one had it in Anesthesia.[3]

At 11:30am on December 27th, 2008, Israel launched a campaign titled Operation Cast Lead with waves of airstrikes and began a ground invasion of the Gaza Strip on 3rd January 2009, the attack ended on January 18th. On 31st January, the Palestinian Ministry of Health reported that 1440 Palestinians had been killed, of whom 431 were children and 116 were women. In addition, 5380 people were reported injured.

The aim of this study was to explore perceptions of doctors in training about their work during the attack on Gaza and to define the most important factors that affect their work and lives during wartime. In the way to highlight Gazan doctors' experience during the attack we have to explore the experience of doctors in similar conditions in different countries and how did they react. This review will help us to compare between different experiences and will reveal the uniqueness of Palestinian doctors' experience.

Searching through articles, data, and systematic reviews and analysis which talk about doctors' training during wartime is not an easy task. We noted that most articles and papers discussing doctors' situations during wartime are issued by individuals and discuss their personal experiences, views, memories, or testimonies. As war is one kind of disaster, it is worth reviewing the experience of doctors during natural disasters which simulate war events in many respects.

Some facts about medical education during American Civil War (1861-1865) were highlighted by Dr. Michael Echols in web article. **When the war began, the Federal army had a total of about 98 medical officers.** The Medical College of Virginia remained operational during the Civil War; the only southern medical school still in existence which graduated students during the civil war. Fifteen years after the Civil War, surgeon George Otis cited some of the principal advances of Civil War surgery.[4]

Many testimonies of former medical students who lived in London through the period 1939-1941 during the Second World War were collected and interpreted by Dr K. Flynn. Although all obstacles arose because of war situation which included evacuation processes of medical schools, lowering calling age for military service and shifting of clinical students to sector hospitals; the education process did continue and students obtained wide experiences.[5]

In the nearest country to Palestine and the most contemporaneous; Lebanon was engaged in a war with the Israeli army in the summer of 2006. This war lasted for about one month and is similar to our experience in Gaza in 2008-2009 in its intensity and horrible effects. A study was done by Lebanese doctors to elucidate the range of experiences of doctors-in-training during the war. Medical students and residents found they were able to draw on levels of resourcefulness, initiative and were more psychologically engaged with their patients than they had been prior to the war during routine work. Respondents felt pride in their work and roles as doctors and claimed they became more skilled and mentally prepared to deal with future violence-related trauma. In summary, researchers in this study argue that alongside all the traumatic effects of war on doctors-in-training, the war also allowed them the opportunity to practice unique skills, attitudes and feelings.[6]

Iraq is unique in its history of suffering of frequent wars, sanctions, siege, and internal civil conflicts since 1980. In the past two decades, wars, corruption, and a lack of strategic planning have damaged Iraq's system of medical education. Furthermore, persecution of doctors and abuses of human rights caused many to leave the country. Throughout the 1990s, Iraq's medical schools and

health-care professionals became isolated, and a generation of doctors graduated with inadequate training. The standard of undergraduate and postgraduate training varied greatly across Iraq.[7]

On Thursday, 7th July 2005, a series of four bombs struck London's public transport system during the morning rush hour. These terrorist attacks killed 52 people and injured more than 700. Many unforeseen problems were encountered by medical teams within short period of time. Following the attacks, the mobile phone networks across London failed, and the internal telephone lines became blocked due to the volume of calls. Treating patients from four different explosion sites in the same hospital necessitates clear demarcation due to the risk of potential bio-hazard and cross-contamination but this action was completely ignored. Patient records, crowd control and dealing with bereaved relatives and friends are some examples of other challenges arose during this attack.[8]

One of the interesting articles about medical education during war was talking about the role and activities of medical students involved in the Balkan War (1991-1995). Students engaged in extracurricular activities related to medical aspects of war, including organization of resuscitation and first aid courses, collecting medical documentation on war victims, humanitarian help to refugees, and peace-promoting activities. Some students joined mobile surgical teams on the battlefronts. Intensive engagement in extracurricular activities related to their profession was of enormous benefit to the students.[9]

In spite of good and long preparation of medical teams for wartime, you cannot predict all problems and obstacles that you might face unless you actually engage in real events. The best example for this fact is illustrated in the experience of US Army in the first Gulf war. Regarding the performance of US medical units in the Gulf war (Operation Desert Storm) 1990/1991, there was a report prepared by General Accounting Office (GAO) in Washington to review the Army's effectiveness in deploying medical units in support of Operation Desert Storm. One of the important findings in this report states that many doctors and nurses were not trained during peacetime to perform their wartime missions, had no training in treating chemical casualties, and had not participated in field training, resulting in doctors and nurses being unfamiliar with their units' missions or equipment. The Army also faced equipment and logistical support problems.[10]

The prime and effective role of administrative organisations in adjustment and re-allocating of available resources efficiently within high speed responses to major event could obviously be observed in Katrina hurricane. More than 2000 medical students, doctors in training, and graduate students were among those affected on 29th August 2005 as hurricane Katrina hit the US coast. The Association of American Medical Colleges website was updated almost daily and became the key way of organising and disseminating information for students, trainee doctors, and administrators.[11]

Unusual forms of medical disaster may happen after the sudden blackout and cutting off electricity and water supplies for hospitals. On 14th August 2003, the North East-Central area of the United States within the distribution of the Niagara electric power grid experienced a major power failure. Three emergency medicine physicians who are knowledgeable in disaster preparedness and response reviewed the after-action reports from four urban, inner-city hospitals. During this few hours of blackout more than 15 serious problems encountered which nearly paralysed the work in these hospitals.[12]

To conclude the main points that rose in all previous literature, we could simply say it is a state of chaos. No definite roles, steps or plans would be suitable

and applied to all events but doctors might seize these opportunities to learn extraordinary lessons.

METHODOLOGY:

My study is a retrospective, descriptive survey. Because the vast majority of victims during the attack on Gaza needed either surgical intervention or intensive care, the main workload fell on the shoulders of surgeons, anesthetists, and intensive care specialists. This was the main reason that I selected doctors involved in the training programmes of General Surgery and Anesthesia to be the population of my study. An electronic questionnaire consisting of 30 questions was developed; Survey Monkey site services were used to create the survey and a special link was developed for this purpose. I surveyed all doctors - both trainers and trainees- who were registered in both fellowship programmes. Each trainee is registered at one of the five levels of training (5Rs), while trainers are working in many levels. I obtained consent from the Palestine Medical Council in Gaza to perform this study and asked them to help me in obtaining e-mail addresses for the survey population. The survey was e-mailed to a total of 71 doctors in the two programmes. Collection of responses started on 1st August 2010 and ended on 15th September 2010.

We can categorize the questions in the survey under three main headings: (A) Identification questions: which include recognition of the participants gender, age group, programme and level of training, and whether they are trainers or trainees. (B) Questions revealing perceptions of participants about their programme directorates' response to the attack and validity and applicability of training curricula in such condition. (C) Questions illustrating the performance and attitudes of doctors during the attack, different internal and external factors which affect doctors' work and lives and the transferable lessons they gained from this experience. Types of questions vary according to purpose. Doctors who respond to all questions of the survey were categorized under the group of 'full response' and those who did not complete answering all questions named as 'partial response'. We have considered and analyzed responses and answers from all participants even those who did not complete answering all questions of the survey.

Analysis of responses and results was done by two methods. The numerical data which was obtained from the identification questions were analyzed by using the analysis tool of the Survey Monkey web site. Because the survey contains many open-ended questions and comment or descriptive text questions which describe the perceptions of participants toward many issues, I needed to interpret these answers by myself.

RESULTS:

The total response rate was 67.6%. 48 responses from doctors in the two specialities were collected in the survey web site. All doctors involved in the study were men. (Table 1) summarizes the total numbers of participants in both specialities and differentiates between their responses.

(Table 2) shows differences between perceptions of trainers and trainees about the validity and applicability of their educational curricula during wartime.

Suggestions by doctors to make training curriculum more valid during such situations vary from very pessimistic views (7 doctors) who considered that there was no way to apply any educational activity during wartime especially such as happened in Gaza, and very optimistic doctors who saw an opportunity to implement the current curriculum during emergency situations but with certain necessary amendments. For example, they suggested to prepare few concentrated lectures and to increase supervision during work in the field to

Table 1: Doctors surveyed according to speciality and response					
	General Surgery		Anesthesia		Total
	Trainers	Trainees	Trainers	Trainees	
Total number of doctors surveyed	13 (18.3%)	25 (35.2%)	11 (15.5%)	22 (31%)	71 (100%)
Full response	4 (12.9%)	11 (35.5%)	4 (12.9%)	12 (38.7%)	31 (43.7%)
Partial response	3 (17.7%)	5 (29.4%)	4 (23.5%)	5 (29.4%)	17 (23.9%)
No response	6 (26.1%)	9 (39.1%)	3 (13.1%)	5 (21.7%)	23 (32.4%)

Table 2: Participants' Perceptions about validity and applicability of training curricula during the attack on Gaza				
	Impossible	Difficult	Possible	Easy
Trainers (n=13)	3 (23.1%)	3 (23.1%)	6 (46.1%)	1 (7.7%)
Trainees (n=33)	5 (15.1%)	18 (54.6%)	10 (30.3%)	0 (0%)

exploit many unusual cases to learn from. Ten doctors emphasized the shortage of expert trainers and the urgent need to recruit more professionals who mainly have experience in war and emergency medicine. Seven doctors insisted on doing more training and practise during normal times to improve essential skills to deal with such situations. Doctors suggested using a simulation tool to enhance crisis management skills and to integrate special sections into the curriculum talking about management of war injuries and types of unusual weapons' victims like White Phosphorus, Dense Inert Metal Explosive (DIME) and chemical weapons as mustard gas, enhancement of triage skills of all doctors was highlighted by 4 doctors.

Majority of the surveyed doctors (84%) deny any communication between them and their programme directorates at the beginning and during the attack. 90% of surveyed doctors did not hear about or attend any meeting or evaluation process for experience of trainers and trainees after the attack on Gaza.

84.4% (6 trainers and 21 trainees) strongly agree that 'The war shows cases and conditions which enable you to learn things that will never occur during normal days'.

Regarding the degree of standards observed in dealing with new and serious cases during the war; 46.2% of surveyed doctors believed that they met 60% of the work standards during their jobs whilst 36.5% of doctors achieved 80% of the job standards. Nineteen doctors were 80-100% satisfied with their performance.

In trying to define the main obstacles that Gazan doctors faced, (Table 3) summarizes the surveyed doctors' responses about the top three problems which prevented them from doing a satisfactory job.

There is general consensus between trainers (7 of 8) and trainees (17 of 23) on considering the large number of injuries as the main problem they had confronted during the attack.

Majority (70.9%) agreed that the distressing atmosphere of war was the prime element that disturbed doctors' lives outside the hospitals. 67.7% of surveyed doctors assumed that their performance and the institution response will be better than for the last war, if this event recurred again. The ten doctors who believed that the response and

Table 3: Obstacles of clinical work according to participants during the attack on Gaza						
	Large number of injuries	Severity of casualties	Long hours of work	Stress and insecure atmosphere of war	Shortage of medical supplies and workers	Lack of good management & leadership
Trainers (n= 8)	7(87.5%)	5(62.5%)	3(37.5%)	3(37.5%)	5(62.5%)	1(12.5%)
Trainees (n= 23)	17(74%)	11(47.8%)	7(30.4%)	13(56.5%)	9(39.1%)	12(52.1%)

performance of doctors will not improve if any war recurs in future justified their view by 'the system, conditions and administration are still the same after the attack on Gaza' and 'we do not learn from our mistakes'.

'How the attack influenced your willingness to work and study?' Twenty-two out of thirty- one participants (5 trainers and 17 trainees) considered that the war had a positive impact on their ambitions and willingness to study and work more than before.

Finally, I asked for any special advice for new graduate doctors about what should they learn or do to cope with such a situation. Mainly, they advised, calm and patience, and try always to work and learn in teams. 'Whatever you do, it will definitely have a value, so work as much as you can as best as you can' was one of the statement of Anesthesia trainers. Many doctors advised new graduates to learn more about basics of emergency medicine, resuscitation and triage principles and management of war injuries.

DISCUSSION:

The attack on Gaza is classified as one of the devastating events that affected Gazans across their lives based on the number of casualties in similar period of time (about 65 deaths and 245 injuries per day for 22 consecutive days).[13] Doctors are considered one of the heroes of attack on Gaza. I can honestly say that it could not have been better than it was. Testimonies of the two Norwegian doctors in their book 'Eyes in Gaza' are strongly supporting my view. Dr. Mads said 'The intensive care unit at Al-Shifa had always impressed me; their therapeutic principles are modern and up-to-date, and their documentation is very good. Even in this disaster setting, they carried out high quality treatment; in spite of the great influx of critically injured patients and the shortage of resources'.[14] This confession does not mean that there were no mistakes or defects in performance of medical teams and these mistakes should be the targets of our investigation to learn from and perform better in the future. The response rate to survey was satisfactory but long hours of electricity blackout and weakness in internet services in Gaza Strip played an important role in high rate of partial and non-responses.

By talking about the administration role of the residency programme directorates, who control and regulate the training speciality programmes, we can say it showed high degree of chaos and was inefficient in dealing to the events of the attack on Gaza. They completely lost contact with doctors in training programmes which was confirmed by most surveyed doctors (84%). We could easily see a huge difference between the reaction of the leaders in Gaza and that of the Association of American Medical Colleges during the Katrina hurricane.[11] In country like Palestine which is one of the most recognized area of continuing emergencies; it's strange to find that there is no chapter or article talking about emergency arrangements included in the council's regulation book 'Palestine Medical Council Guide' (Laws-Bylaws-Rules).[15] Since both Gaza Strip and West Bank are considered on-going

conflict zones, one would expect from Palestine Medical Council and training programmes to have systematic review of trainees' performance and up-to-date contact details for all doctors in training during emergency events like the attack on Gaza.

Regarding curricula of training, neither curriculum (Surgery and Anesthesia) included any specific section describing running of programmes during emergency situations. There were no suggestions for any special arrangements or alternatives to continue educational activities during unusual circumstances (which are common in Gaza). Palestinian doctors suggest making the curriculum more suitable to conditions of Gaza. Palestinian doctors want to integrate a special section in the curricula describing the management of different types of war casualties like the case of White Phosphorus burn which was described in Al Barqouni report[16] and different competencies needed in such situation. What I want to say is; 'different battles need different strategies' and our curriculum is our educational strategy so, it must cope with the demands and conditions of our community. We should find flavour of Palestine in the curriculum of our training programmes.

Generally, we can say that the experience of Gazan doctors during the attack on Gaza has no significant difference from the experiences of doctors in other conflict areas. The main complaint of doctors in war time always arises from the large number of injuries and the responses of Gazan doctors are no exception. Doctors need to improve their skills in triage and how to maintain the hospital surge capacity. As one of the doctors who worked in Intensive Care Unit during attack on Gaza, I cannot express my exact feelings on the first day of attacks. It was a mixture of anger, sadness, hyperactivity and willingness to work without stop. The same feelings were experienced by Lebanese doctors during Lebanon-Israel war in 2006.[6] The brilliant ideas and suggestions that doctors offered in this study prove substantially that we have active, smart and creative minds. We lack experts, resources and time to exploit these minds. Continuous dispute is exhausting our efforts to plan for improvement.

CONCLUSIONS AND RECOMMENDATIONS:

Despite of significant defects that appeared in the administration system of residency training programmes in Gaza and in the adopted curricula, we cannot deny the great role that Gazan doctors played during the attack on Gaza. Admittedly, postgraduate medical education in Palestine and in spite of its very young age seems to be promising. We have to exploit our conditions and create opportunities from calamities. In this way, we suggest that Medical Council and programme directorates should always be ready with plans for any extraordinary conditions -which are very common in Palestine- and to be keen to continue educational activities during emergencies with concentrated curricula and inform all trainees, trainers and administrators about their roles and responsibilities during such situations. Integration of specific sections describing basics of war medicine and crisis resource management into the training curriculum should be one the priorities. More detailed and focused researches should be carried to discover more about the skills and attitudes of doctors during the last attack and to find out what should they learn to enhance their performance.

STUDY LIMITATIONS:

The main challenges and difficulties of this study were immature concept of doctors about importance of participation in surveys and unavailability of e-mail addresses for all doctors involved in training programmes in the Medical Council in Gaza and programme directorates' records. There are some points in the questionnaire that need to be

discussed in a separate study in more details to reveal clear attitudes and behaviours of doctors about work during war. Expanding the population of the survey to include all doctors, nurses and other health workers who worked during the attack on Gaza might be more inclusive and would reveal more conclusive results.

I wish for my modest study to be a trigger for more deep and detailed research to improve the performance of health sector in emergency situations in Gaza Strip in particular, and in the occupied Palestinian territory in general. It is my privilege to be one of those who stood and worked during the attack on Gaza.

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