

MULTIPLE INJURY PROFILES FOR ROAD CASUALTIES

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Background: Methods that assess increased severity in patients with multiple injuries have been in use for years. Methods that maintain injury detail are new and not widely used. Epidemiological reports, frequently describe only the primary diagnosis, thus losing information on additional injuries, underestimating the true burden of injury.

Objectives: To demonstrate the benefit of using multiple injury profiles (MIP) as an alternative to “primary diagnosis,” for the presentation and analysis of multiple injuries in hospitalized road casualties.

Methods: Retrospective analysis of road casualties recorded in the Israel national trauma registry between 1.1.1998-12.31.2002. Multiple diagnoses per patient were recorded. A primary diagnosis was selected for each patient and data was presented twice: Once by selecting a primary diagnosis and then using multiple injury profiles.

Results: 23909 transport casualties were included. Findings demonstrate that multiple injury profiles enable the identification of all patients with a specific injury, even where secondary. The proportion of additional injuries recorded when using multiple injury profiles ranged from 12% in head injuries to 270% for facial injuries.

Based on the primary diagnosis, patients with head, chest, and abdominal injuries had a 5-6% inpatient-death rate each. Multiple injury profiles of the same population reveals that an isolated-head-injury has 3%, isolated-chest, and isolated-abdomen have a 1% inpatient death rate, while combined head and chest casualties had a 21% inpatient death rate.

Conclusions: Multiple injury profiles are a new approach that enables presenting an improved picture of injury in a population.

ISRAEL IS ON THE WAY TO CAPTIVATE PEAK IN THE LIST OF COUNTRIES WITH HIGH PROPORTION OF DRUNK DRIVERS AMONG ROAD FATALITIES

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Background: The extent of alcohol contents in the blood of Road Traffic Accident (RTA) fatalities in Israel is unknown.

Objectives: To estimate prevalence of Blood Alcohol Concentration (BAC) above the permitted limit (50 mg/100cc) among road fatalities in Israel; to examine the trend of BAC above the permitted limit in the recent 5 years among killed drivers; and to characterize the population of drunk drivers killed in RTA in Israel during this period.

Methods: Data on RTA casualties, from the National Center of Forensic Medicine for the period of 2000-2004 was examined.

Results: 1520 fatalities, representing 58% of all 2627 killed in RTA in Israel between 2000-2004 were recorded. The highest prevalence of BAC level above the 50 mg/100 cc limit was found among drivers (8.2%, n=36), compared to other road users (5.5%) (p value=0.048). The majority of these drivers had BAC level above 80 mg/cc. During the study period there was progressive elevation summing to 194% in 5 years, in the prevalence of driver casualties with BAC level above 50 mg/100cc (from 5.0% in 2000 to 14.7% in 2004) (p value for trend=0.03). The age group with the highest frequency of BAC above 50 mg/100cc - (19.2%) was among 30-33 years old.

Conclusions: Israel has a steep increase in the proportion of drunk drivers among RTA victims during the last decade. Intervention is necessary to stop the trend which, as is, will bring us to be one of the highest among developed countries in two years time.

INJURY PATTERNS OF ISRAELI CHILDREN INJURED WHILE USING SKATEBOARDS, ROLLERBLADES, AND MINI-SCOOTERS: DATA FROM THE ISRAEL TRAUMA REGISTRY

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Introduction: Skateboards, rollerblades and mini-scooters are popular recreational activities with children. There was a marked increase in the number of children injured in 2003 and 2004.

Objective: To describe the spectrum of injuries and to determine potential areas of safety intervention for children injured while using mini-scooters, rollerblades, or skateboards.

Methods: Retrospective analysis of data on Israeli children 3-17 years old included in the Israel Trauma Registry (ITR) injured due to skateboard rollerblades or mini-scooter use between 2003 and 2004. Patient characteristics included age, sex, Injury Severity Score (ISS), inpatient mortality, body region injured, hospital length of stay, ICU and operating room use, involvement of additional vehicles in accident, and use of protective equipment.

Results: 116 children met study criteria, accounting for 3% of all children aged 3-17 years old hospitalized following road accidents. 62.1% were 9-14 years old and 78% male. Accidents occurred in a street or road 78% of the time and another vehicle was involved 9.5% of the time. Protective equipment was not used by 52.6% of children and for the remainder its use was not documented. Minor severity (ISS 1-8) was recorded for 74.1 %, moderate (ISS 9-14) for 22.4%, and severe (ISS 16+) for only 3.5%. One child died during hospitalization. Hospital length of stay was one day for 46.5% and only 5 (4.3%) children were hospitalized for one week or more; one child (0.9 %) required ICU admission. No surgical intervention was required for 69.0% of children and only one child required more than one operation. The most frequently injured body regions were the upper and lower extremities (39.7% upper, 32.8% lower) traumatic brain injury (21.6%) and head and face (19.0%). Involvement of car or bus in the accident significantly increased the incidence of severe head (72.7% vs. 11.8% $p < 0.0001$) and head and face injury (54.6% vs. 11.8% $p=0.0003$) without altering the incidence of extremity injury. These children were more severely injured (9.1% vs. 3.2% with ISS 16+).

Conclusions: Accidents while using rollerblades, mini-scooters, or skateboards cause significant morbidity but minimal mortality, particularly due to extremity and head injury. Increased severity with the involvement of a vehicle in the scene of accident suggest that modifiable risk factors for injury include the establishment of designated recreational areas, promoting the use of safety equipment among participants, and increasing the awareness of the need for safety equipment among medical personal.

HOW WILL WE HELP THE HELPERS IN DISASTER

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Tel Aviv Sourasky Medical Center (TASMC) is level one trauma center, located in the center of Tel Aviv city.

During the last six years the medical center faced more the 20 Mass Casualty Incidents (MCI) due to terror attack and treated about 700 injured.

While treating the critical and moderate injured, the immediate necessities in MCI are to save much life as you can while providing medical care, then, after performing life saving procedures, resuscitation and stabilization, there is time to focus on patients' emotional support.

Due to the fact that victims of terror often display severe emotional reactions, while treating the minor injured, the aspects of emotional support always will be taking place parallel to the medical care.

Most emotional symptoms known as Post Traumatic Stress Reaction (PTSR) dissipate naturally over the course of a few days, yet, research shows that one out of every four victims may not recover naturally, and may develop Post traumatic Stress Disorder (PTSD).

Following the exposure to terror attack as well as treatment of terror victims, health providers are considered as the "secondary circle of trauma"

According to researchers, health providers experience symptoms of PTSD, Including psychological difficulties and physiological symptoms such as depression, anxiety, unrest, alienation, feelings of uselessness, as well as loss of appetite, weight loss and sleep disorder.

These are normal people facing abnormal situations...Nobody prepares us to see and treat shattered bodies... Nothing prepares us to stand against terror injuries or the mutilated bodies of infants and children.... How can we deal with our feelings and fears? How can we avoid the development of PTSD as a result of the accumulated experience?

The paper will share our accumulated experience in MCIs, and will focus on the emotional function of team who took care of the injured.

It will present the attitude of nurses and physicians from the Emergency Department (ED) Intensive Care Units (ICU) and Trauma Department (TD) about their feeling and needs, fowling the events and will present our recommendation for "Return to Routine" in a way we believe can reduce of PTSR and "Help the Helpers" to continue the work while they are well functioning.

MANAGERIAL NURSING RESPONSIBILITY IN MASS CASUALTY INCIDENTS AND DISASTER: RECOMMENDATIONS FOR NURSING REQUIREMENT BASED ON ISRAELI HOSPITALS EXPERIENCE WITH MASS CASUALTY INCIDENTS BETWEEN 2000-2006

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During the years 2000-2006 8,000 people were treated in the Israeli hospitals due to Mass Casualty Incidents as a result of terror attacks.

All of the injured are admitted at first into the Emergency Departments (ED) of hospitals and treated by physicians and nurses from the ED that were helped by deployed personnel from other hospital departments.

Following the care provided in the ED, MCI injured are being referred to other hospital wards, including Secondary Evacuation Sites (SES). Some of these sites may operate only in MCI or Disaster

Unlike in wartime, when all of the health system may change its routine work, MCI occurs "out of the blue", while the hospitals are usually at full capacity and may require expending surge capacity.

While facing key nurses from the hospital are taking part in the event and its management. Nurses are required to solve administration, logistic and managerial problems, while most of them may not be trained or qualified for it.

The managerial tasks in such event are not well declared. Nurses manage the event based on "fire extinguishing" concept- when there is a problem, nurses deal with it and solve it, most of the time intuitively.

In order to overview and map the managerial requirements and expectations of the nursing staff in MCI, twenty-four hospitals were divided into 3 categories: small, medium and large. Questionnaires have been sent to all Emergency Nursing Directors (END) in twenty-four hospitals in Israel.

The END applied to all key nurses in MCI and reply with their definitions of the nurses' role in every MCI site, based on the hospital doctrines.

145 nurses how are key personnel in MCI in their hospital defined the managerial nurses role in MCI.

The paper will present the outcome of the survey and will present its recommendation to the national MCI committee.

STOP YOM KIPPUR (AND RAMADAN) HEADACHE: PROPHYLACTIC COX 2 INHIBITOR FOR RITUAL FASTS

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Background: Religious fasting is associated with headache. This has been documented as ‘Yom Kippur Headache’ and ‘First- of - Ramadan Headache.’

The Cox2 inhibitor, rofecoxib, has been reported effective in preventing perimenstrual migraine and in preventing recurrence of migraine. Its half-life is a relatively long 17 hours.

Objective: To determine whether 50mg rofecoxib taken just prior to the 25 hour Yom Kippur fast, would be effective in preventing headache.

Design and Methods: We performed a double blind randomized prospective trial of rofecoxib 50mg vs placebo, taken just prior to the onset of fasting, Yom Kippur 2004.

Setting: Patients were recruited from the general community and hospital staff.

Participants: We studied a volunteer sample of 105 subjects aged 18-65 with known fasting headaches, who intended to complete the 25-hour fast. We had enrolled 170 patients 65 of which did not return the study questionnaire. No patients withdrew because of side effects.

Intervention: The treatment group received 50mg of rofecoxib just prior to the fast. The control group received placebo.

Main Outcome measure: The incidence of headache in the two groups. This was decided on prior to data collection. Secondary outcomes were severity of headache, and general ease of fast.

Results: In the treatment group (n=53), ten or 18.9% (95% CI = 1-32%) vs 34 or 65.4 % (95% CI = 51-78%) of the placebo group (n=52), had headache at some point during the fast ($p < .0001$). Severity of headache in the treatment group was significantly less for the treatment group (3.45 vs 6.29 on a visual analog scale of 10 ($p = .009$)). None of those receiving rofecoxib reported a ‘more difficult than usual fast’ whereas the distribution of difficult to easy fast among the placebo group was more even.

Conclusion: Rofecoxib 50mg taken prior to a twenty-five hour ritual fast prevents and attenuates fasting headache.

Trial registry: [Clinicaltrials.gov](https://register.clinicaltrials.gov) protocol id 3395/2004 <https://register.clinicaltrials.gov/>

COMPREHENSIVE STUDY OF MYOCARDITIS AT THE ED (COSMED II): CARDIAC-MRI AND ELECTROCARDIOGRAPHY IN ACUTE MYOCARDITIS

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Introduction: The purpose of this study is to determine in acute myocarditis, if wall location of electrocardiographic (ECG) ST segment or T wave changes correlates to Cardiac Magnetic Resonance Imaging (CMR) myocardial wall pathologic findings.

Methods: A cohort of randomly selected adult patients with acute myocarditis were included. This is a branch of a larger study on acute myocarditis at the emergency department (ED). Patients underwent serial electrocardiogram traces and cardiac markers (Troponin I and CPK-MB) every 6-8 hours and cardiac-MRI. Researchers used a 1.5 Tesla Magnet (Excite General Electric) machine. Perfusion images were obtained in real time, and delayed enhancement images were obtained 10 minutes following contrast administration. Researchers interpreting results were blinded to serum cardiac markers results.

Results: Twenty-six patients (age 30.3 ± 7.5 SD, 25 of male gender) were examined. Twenty four (24, 92.3%) had subsequent elevations of serial cardiac markers. Two patients with subsequent normal levels of cardiac markers had normal examinations. Twenty three patients (87.5%) had an abnormal ECG on admission.

The cardiac-MRI of sixteen (66.6%) patients showed characteristic epicardial delayed enhanced patchy lesions. The wall distribution of the lesions was compatible with the location of the ST segment changes in 14 (87.5%) of the sixteen patients with a positive CMR. The most frequently affected walls were the inferior and lateral walls (81.25 and 75% respectively).

Conclusions: CMR is a promising diagnostic tool for the diagnosis of acute myocarditis. Still conventional ECG though less specific, is more sensitive than CMR in the recognition of acute myocardial disease at the ED. In most cases the ECG changes and CMR findings agree on the wall location of inflammation. Though delayed enhancement regions are frequent the clinical and prognostic value of the finding remains to be defined.

COMPREHENSIVE STUDY OF MYOCARDITIS AT THE EMERGENCY DEPARTMENT (COSMED III): ELEVATED N-TERMINAL PROBNP DIFFERENTIATES ACUTE MYOCARDITIS AND ACUTE MYOCARDIAL ISCHEMIA FROM ACUTE PERICARDITIS AT THE EMERGENCY DEPARTMENT

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Introduction: The problem of differentiating acute pericarditis from myocarditis or from acute ischemia in the ED is a main source of concern for the emergency physician. The limited availability of echocardiography at the ED for bedside diagnosis of this disease dictates efforts to find an alternative diagnostic test. N-terminal proBNP (pro BNP) have been shown to correlate with ventricular wall stress. We found no data on proBNP in pericarditis or on its capability to differentiate this entity from acute myocarditis or acute ischemia. We hypothesized that this marker of increased cardiac filling pressures and myocardial stretch would be normal in acute pericarditis, because the hemodynamic alteration in this pathology lies on a poor diastolic ventricular filling volume. The present study evaluated the role of pro BNP in differentiating between acute pericarditis and other entities presenting to the ED with chest pain and ST segment changes.

Methods: We tested 8 patients with acute pericarditis (originally 9, one excluded because of active malignancy) and 8 age and gender matched patients with acute myocarditis. All blood samples were withdrawn at the ED and tested by an Elecsys pro BNP test (Roche Diagnostics Corporation, IN, USA), a highly sensitive electrochemoluminescence immunoassay (ECLIA) based on a sandwich format. The sensitivity of the assay is 5 pg/ml and the intra-assay coefficients of variation is <3%. The assay's functional sensitivity is <50 pg/ml. Pro BNP abnormal levels were pre-established at a 300 pg/ml value. Statistical analysis was performed using a Student's one tailed test.

Results: A significant difference of pro BNP levels was observed. The mean pro BNP level was 217 ± 133 pg/L in the acute pericarditis group, whereas pro BNP was 1693 ± 2199 pg/L in the acute myocarditis group (p value =0.046) .

Conclusion: pro BNP clearly differentiates between myocardial and pericardial disease. An elevated pro BNP should make less probable a diagnosis of pericarditis in acute chest pain.

MEDICAL ASPECTS OF POLONIUM-210 INTOXICATION

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Alexander Litvinenco, a former Russian agent, has deceased on November 23rd 2006 after a severe Polonium-210 (^{210}Po) intoxication. According to information published in the general press, he presented with symptoms compatible with the acute radiation syndrome, including bone marrow failure and alopecia, and from cardiac failure. This is the first published case of significant medical effects due to ^{210}Po , and the first of short-term (deterministic) mortality due to internal contamination of an α emitter.

^{210}Po is a radioactive element with a striking high specific activity. Its physical characteristics make it an extremely potent poison, with less than $1\mu\text{gr}$ needed for a fatal dose. ^{210}Po can be found normally in the environment, as a pollutant in cigarette smokers, and is also artificially created in nuclear reactors. It is commonly used in various devices in the industries, mainly as a static electricity eliminator.

The metabolic behavior of ^{210}Po is quite different from other α emitting radioisotopes, mainly by its ability to bind hemoglobin nonspecifically and therefore move in the blood, while irradiating the body in a homogenous pattern. The critical organs damaged by ^{210}Po internal contamination are the spleen and the kidneys, but other organs and tissues, including the bone marrow, the testicles and the vascular system exhibit unique reactions to it. High doses of ^{210}Po , like the dose used to assassinate Litvinenco, will cause a disease resembling the acute radiation syndrome of whole-body external radiation exposure. Low contamination will cause an increased susceptibility for future malignancies.

Treatment of internal contamination with ^{210}Po is by intramuscular Dimercaprol (BAL). Other chelators of the thiol group have been developed and evaluated, but none is approved for human use in the present.

CHARACTERIZATION AND IDENTIFICATION OF ILLICIT DRUGS AND ALCOHOL USERS AT THE PEDIATRIC EMERGENCY DEPARTMENT

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Background: Substance abuse among adolescents is a major public health concern. Self-reporting of substance use may not be reliable. We hypothesized that among patients aged 12-18 years presenting to the emergency department (ED) who meet a predetermined set of criteria at least 20% suffer from drug related pathology.

Objectives: to determine the percentage of substance abuse among patients presenting to the ED with specific symptoms and to determine if physicians can reliably identify these patients.

Methods: Design: A prospective cohort study.

Patients: Patients aged 12-18 years presenting to the Pediatric ED between January 1st 2005 and December 31st 2006 were included if they met at least one of the following inclusion criteria: decreased level of consciousness, acute confessional state, new onset of psychiatric symptoms (psychosis, depression), panic attack, attempted suicide. Patients were also included if there was a history of substance abuse.

Intervention: The pediatrician in the ED evaluated all patients who met the inclusion criteria. Based on the history and clinical findings the physician assessed on a 5-points likelihood scale the possibility that the patients' symptoms are related to substance abuse. A urine sample was taken from all patients and tested by an immunoassay for drugs of abuse. Ethanol level was measured in the blood.

Results: 135 children were studied. Forty-one (30%) were tested positive for drugs or alcohol. Among children that did not report drug or alcohol usage 12% were positive to drugs or alcohol. Glasgow coma scale was lower among children tested positive for drugs or alcohol. There was a good correlation between physicians scoring and positive drug/ethanol test ($p=0.001$). The most accurate predictors for drugs or alcohol usage in children were: Physician assessment ($p=0.001$); attempted suicide as a presenting symptom ($p=0.001$) and patients self-reporting on ethanol drinking or drug abuse ($p=0.049$).

Conclusions: More than 10% of adolescents presenting to the ED due to substance abuse do not report it. Physicians' can reliably identify many of these patients. In such cases a urine drug screen and ethanol measurement may help in establishing the diagnosis.

SEVERE METHANOL POISONING AND ORGAN TRANSPLANTATION

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Introduction: Methanol is a toxic alcohol used as a solvent in various industrial and laboratory procedures, antifreeze, fuel for picnic stoves and photocopier toner. Severe methanol poisoning is associated with CNS depression, visual impairment and metabolic acidosis with high anion and osmolar gaps. The treatment includes supportive measures, alcohol dehydrogenase inhibitors, folic acid and in some cases hemodialysis.

Case report: A 49 years old man was admitted to the emergency department (ED) due to acute confusion and CNS depression. According to his wife, he used to drink alcohol occasionally “due to stress”. In the previous night she found him at home after he had drunk from an unusual bottle. During the night he was agitated, stared around and early in the morning fainted. She brought a bottle labeled “denatured alcohol”. In the ED he was hemodynamically stable, drowsy and disoriented. During the primary ED evaluation he had respiratory arrest and was mechanically ventilated. Brain CT did not reveal brain edema or bleeding. Laboratory tests revealed severe metabolic acidosis (pH- 6.81, HCO₃- 5.7mEq/L, anion gap 58), osmolarity 556mOsm/Kg, and osmolar gap 240. Toxic alcohol poisoning was suspected and the patient was treated with IV sodium bicarbonate, fomepizole and folic acid and hemodialysis. Although the severe metabolic acidosis resolved the patient remained unconscious. Further laboratory evaluation confirmed severe methanol poisoning: serum methanol 524mg/dL (serious toxicity >40mg/dL) and formic acid 78mg/dL (serious toxicity >20mg/dL). After brain death was determined and family consent was obtained the heart, lungs kidneys, and liver were transplanted. In a 7 months follow up, all organs were well functioning.

Discussion: Poisoned patients with brain death are infrequently considered as potential organ donors. However, numerous case reports and case series report successful transplantations after various poisonings, methanol being the most frequent. It is estimated that less than 1% of organ donations originate from patients who died after poisoning or drug overdose. Potential problems encountered with organ transplantation from poisoned patients are organ damage from the poison or from the critical condition of the patient and secondary poisoning due to redistribution of the poison from the transplanted organ. When supportive and targeted therapy preserves patient's hemodynamic status and organ functions, organ transplantation from poisoned patients should be considered and a clinical toxicologist be consulted.

A STUDY OF THE WORKFORCE IN EMERGENCY MEDICINE IN ISRAEL: 2003

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Introduction: Emergency Medicine (EM) was officially recognized as a specialty in Israel in 1999. In 2003 the first nine Israeli-trained emergency physicians (EP) were certified. This survey was undertaken to assess current staffing of emergency departments (ED) in Israel and to attempt to estimate future staffing needs for emergency physicians.

Methods: In July of 2003, we sent a survey to ED directors at all 25 general hospitals in Israel. We asked questions relating to staffing by number of physicians, type of and level of training, and differential staffing by time of the day and week. In addition we inquired as to the ED census and structure, hospital size by number of inpatient beds, and size of the ED.

Results: Twenty-four of 25 ED's responded (**96%**). There were **59** EM specialists registered in Israel. ED's reported seeing a total of **1,872,500** visits annually. Emergency care is otherwise given by specialists and residents in other fields, and non-specialist physicians. Daytime at large hospitals there are an average of 2.5 EM specialists and another 4 specialists of other types on duty. At night in large hospitals there is an average of <1 specialist of any kind (typically not EM) on duty. Evenings and nights in most ED's care are turned over to the care of non specialists (residents and others).

Conclusion: The recognition of the need for EM as a specialty in Israel has not as yet translated into care of emergencies by emergency physicians for most patients. In order to adequately staff ED's with physicians trained in EM, an emphasis increasing EM staff and resident positions. The need appears most acute in medium sized hospitals and during off hours and weekends.

בדיקת רמת המוכנות של הצוות המטפל במחלקה לרפואה דחופה להתמודדות עם אירוע רב נפגעים בילדים

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מערכת הבריאות בעולם, ובישראל בפרט, מתמודדת עם אירועים רבי נפגעים (אר"ן) (Multicasualty) event תוצאה של מעשי טרור. בשנים האחרונות, התרחשו אירועים בהם הנפגעים היו בעיקר ילדים. מציאות זו מחייבת את בתי החולים להיערך להתמודדות עם אר"ן בילדים. סקירת ספרות שנועדה לזהות המלצות ייחודיות, הצביעה על מחסור בתוכניות הכשרה, ורתיעה של צוות מטפל מפני התמודדות עם אר"ן בילדים. מטרת המחקר הייתה לבדוק את רמת המוכנות של הצוות המטפל במחלקה לרפואה דחופה (מלר"ד) להתמודדות עם אר"ן שהנפגעים בו הם ילדים. במחקר השתתפו 105 נבדקים שכללו את כל הצוות הסיעודי והרפואי העובד במלר"ד באחד מבתי החולים בארץ. כלי המחקר היה שאלון בן 41 פריטים שבדק תפיסות, עמדות וידע של מטפלים בהתמודדות עם אר"ן בילדים, בהשוואה לאר"ן במבוגרים. מהימנות הכלי נעה בין $\alpha = 0.6-0.94$ בכל חלקי השאלון.

התמונה הכללית שעולה מהמחקר מלמדת על רמת מוכנות נמוכה לאר"ן בילדים. הסבירות לתרחיש של אר"ן במבוגרים דורגה משמעותית גבוה יותר בהשוואה לאר"ן בילדים. יכולת ההתמודדות הנפשית, הידע והמיומנות באר"ן במבוגרים, דורגו משמעותית גבוה יותר ($p=0.000$) מאשר באר"ן בילדים. צוות האחיות דרג גבוה יותר מהרופאים את הערכתם בנוגע לרמת הידע והמיומנות שלהם באר"ן ילדים. רמת הידע שנבדקה בתחום ההיערכות לאר"ן בילדים נמצאה כנמוכה אצל כל המשתתפים. הסכמת המטפלים לנוכחות הורה ליד ילדו באירוע של אר"ן הייתה נמוכה- בינונית.

על בסיס הממצאים מומלץ לבנות תוכנית התערבות ברמת המקרו והמיקרו, שתקדם את מוכנות הצוות המטפל במלר"ד לתרחיש של אר"ן בילדים.