The Impact of being involved in a Medical Adverse Event on GP's (General Physicians) Professional Behavior in an Ambulatory Healthcare Fund

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Promotor:	Prof.dr. J.B. Rijsman
Copromotor:	Dr. Y.T. Tal
Overige leden:	Prof.dr.ir. G.M. van Dijk
	Prof.dr. N.A. Ash
	Prof.dr. Y.N. Niv
	Prof.dr. E. Todorova
	Dr. V. Verlinde

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This thesis is dedicated with deepest love to my husband Ron and to my four children, Chen, Omri, Aviv, and Yuval.

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Focus of Study

The impact on the clinical behavior and professional behavior of General Practitioners caused by their involvement in an adverse event which results in harm to a patient

The present study is uniquely community-based as opposed to hospital-based, focusing on the impact of adverse events that result in harm to patients on physicians' professional behavior, based on objective performance measures rather than physicians' self-reported data.

"Give me the courage to understand my mistakes today so that tomorrow I will be able to see in a better light what I could not comprehend in the dim light of yesterday."
Rabbi Moshe Ben Maimon (Maimonides) 1135-1204

Chapter 1 - Introduction

A. Rationale

In this thesis, I examine in depth how the behavior of a General Practitioner (GP) is affected following involvement in an adverse event. It is my strong belief that this study will improve the ability of the Risk Management Department (RMD) to assist physicians and caregivers to return to normal practice in the shortest possible time following such an event.

Allow me to introduce myself:

I am Deputy Manager of the RMD at the Maccabi Healthcare Fund – one of Israel's leading health funds and the second largest in the country, with more than two million members and about 3,500 physicians.

Every year, our department receives upward of 2,500 reports of various adverse events, which must be processed in the most effective way, in the shortest possible time.

Every day, our department does its best to support and improve the performance of medical staff following involvement in an adverse event. And yet, despite the fact that over the years we have developed new approaches and treatment tools, much remains to be done.

Today, January 22, 2013, is an election day in Israel, and I am taking advantage of this day off to begin the first chapter of my dissertation, in which I describe the motivation behind my choice of topic. It seems to me that the timing is no coincidence. As my country elects a new prime minister, who will hopefully lead us to a better future, I hope that my research may contribute to improved care for doctors and patients alike, and a better future for healthcare.

In this chapter I respond to questions that challenge me as I consider my topic. The central question is: "Why write a thesis about risk management and patient safety?" In particular, I discuss the reasons I have chosen to explore the ways doctors react after being involved in an adverse event in the course of their work.

The answer to these questions is rooted in a period that predates the 13 years during which I have been on duty. It seems that risk management has always been, and remains, part of my personal and professional identity and being. Further, for me risk management is both profession and passion, and not simply another step on my career path.

B. A Personal Note

I was born on May 21, 1964, and seven years later, my sister joined the family. My father is a retired economist and my mother a retired nurse and our parents taught their daughters about the importance of contributing to society, especially in times of crisis. Therefore, it isn't surprising that in 1982 I decided to study nursing. Upon graduating, I started my army service as an officer in a regional isolation hospital. Upon completion of my mandatory military service I worked as a nurse at the Tel Aviv Sourasky Medical Center (known at the time as Ichilov Hospital) in Tel Aviv, in various clinical and managerial positions.

Through my work in the medical system I have learned that all parties – including patients, patients' families, caregivers, administrative or clerical staff – are exposed to the numerous challenges, successes, and failures which comprise the treatment process.

However, even as a nurse in a large hospital who held a variety of positions it wasn't until I joined the RMD that I gained a wider perspective of the medical system, and became more aware of the many intersecting factors that influence outcomes and quality of care.

Fortuitously, around the time when I had decided to leave the hospital and was considering my next steps, I received a call from the Director of the Risk

Management Department at Maccabi Healthcare Services, asking if I would like to join the department as a Risk Manager.

As I reflect on the past 13 years, I understand that I have simply fallen in love with my field, which has granted me the tools to grasp the world of medicine and its economy, structure, motivations and values in a comprehensive way. I have gained a wide perspective on medical procedures, mostly from the point of view of the health fund and not only from the patients' standpoint.

To my mind, Risk Management is the ability to support and assist patients, caregivers, and the health system as a whole wisely, sensitively, and professionally in times of crisis. This activity is permeated by an intense feeling that one is involved in a life-saving mission.

It is this sense of mission that motivates and sustains those like me who choose the field of Risk Management and Patient Safety, a field that is emotionally and physically demanding, in which we are called upon to work beyond regular working hours as we strive to contain others' acutely stressful situations.

My belief in the importance of my work is incredibly fulfilling as I attempt to relate to the caregivers with respect and sensitivity, to support them and provide a safe space where they can speak candidly about their decisions and their approach to their profession.

Those of us who are wholly committed to our work continue to learn and to grow daily, and are motivated to search for creative ideas to support patients, colleagues, caregivers, our administration, and our organization.

The following are two examples of written impressions supplied by physicians after reporting to the RMD about their involvement in an adverse event.

The examples are typical, and illustrate the complexity of the psychological and functional effects on physicians that result from involvement in an event of this kind.

C. Example A

"…Unfortunately, I recently needed help from the Risk Management Department, after I discovered that I hadn't noticed a test result which was very important for further diagnosis.

"I experienced great psychological difficulty coming to terms with the fact that I had missed the test result. ***The fear that I might hurt my patient and my sense of guilt made it difficult for me to work from the moment the event occurred.*** *I still feel upset and keep thinking about it.*

"Since the event, it seems to me that I tend to scrutinize and examine the whole picture in order to make sure, as much as possible, that I haven't overlooked anything in my analysis.

"My greatest fear is that as I contend with my vast workload, errors may occur. Since, in my opinion, our current work conditions are far from optimal, I have been feeling overwhelmed and helpless. I don't know if I would choose to study medicine today, despite the beautiful moments and satisfaction that do exist in the profession. There is no doubt that these thoughts have left me with the sense that something is missing.

"Within all these huge hardships, what stands out most is my contact with the Risk Management Department representative of the Maccabi Healthcare Fund. ***The investigation of the case was constructive and non-judgmental and I felt I was treated with full empathy and understanding.*** *Furthermore, I received guidance about submitting a well-organized report to Maccabi and other authorities that may help me to handle the case at hand.*

"I cannot overestimate the importance of responding sensitively in such cases. ***Empathy combined with feedback may enable the caregiver to return to full functioning, learn from mistakes, and provide better care to patients.*** *An accusatory attitude or tone may cause greater damage to the doctor, worsen his already negative state of mind, and may indirectly exacerbate the situation by contributing to his making mistakes or providing worse treatment to the patient who was involved, and even to other patients.*

"I would like to express my gratitude to the RMD for the support and guidance provided to me in the aftermath of this very difficult experience."

D. Example B

"…. I am a General Practitioner. A year ago a patient of mine died. The event occurred because I didn't diagnose her cancer in time. When it was diagnosed, the disease was already in an advanced stage and all that could be done for her was to provide palliative treatment. I can reconstruct each and every second from the time that the disease was diagnosed. I was not able to grasp how this could have happened to me. How is it possible that a doctor who considers himself a professional among fellow professionals could make such a mistake? ***I felt great shame and a sense of terrible failure. I couldn't work. I felt the need to talk to someone*** *so I turned to the Risk Management Department at my workplace. At the department I found a sympathetic ear.* ***The discussion was incredibly empathic and I was provided with the means to help me manage further treatment.*** *The department head accompanied me during the difficult conversation with the patient. Unfortunately,* ***I couldn't get over the experience and I wanted to quit my job;*** *I saw my next potential failure in each and every patient.* ***These feelings were with me all the time, even when I wasn't at work.*** *I forced myself to go on vacation, and at the recommendation of the head of the department I found professional support to help me overcome the terrible experience. Three months later I was able to gradually return to work. I never forgot the experience but* ***the professional support made it possible for me to undergo a rehabilitation process.*** *Like my patient, I underwent a diagnostic process and subsequent treatment, thanks to which I survived."*

The feelings of emotional distress experienced following an adverse event are well known to me from my private life, at home. I am married to Ron, a specialist in gynecology, and occasionally I hear of such events from him and his colleagues.

The agony suffered by the patient can "paralyze" the doctor, and lead to emotional distress, depression, and damage to the doctor's professional self-esteem. These may jeopardize the medical process as well as professional

interactions with other patients and caregivers. Each of us is a piece of one, large "puzzle." My vocation and chosen career is Risk and Safety Management; I assist those who need me – patients, caregivers, and the medical system as a whole.

E. Challenges Facing the Maccabi Healthcare Fund and the Medical System in Israel

The state of the medical system in Israel is complicated. On the one hand, Israel is renowned worldwide as a leader in various fields of medicine. Patients flock to Israel from across the globe, even from countries considered more advanced, to receive treatment or to be diagnosed by the best Israeli doctors.

However, for decades the public medical system in Israel has been in bad shape for two main reasons: Lack of beds for patients, and a severe shortage of professional manpower.

According to OECD health data from 2012, Israel's total health expenditure in 2009 accounted for just 7.9% of its GDP, below the OECD average of 9.5%. Israel also ranks below the OECD average with respect to health spending per capita: USD 2,165 in 2009 (adjusted for purchasing power parity), compared with an OECD average of USD 3,268. Further, the number of acute care hospital beds in Israel was 1.9 per 1000 population in 2010, below the OECD average of 3.4 beds.

Despite the relatively low level of health expenditure in Israel, there are more physicians per capita than in many OECD countries. In 2010, Israel had 3.5 practicing physicians per 1000 population, above the OECD average of 3.1. However, there were only 4.8 nurses per 1000 population in Israel in 2010, far below the OECD average of 8.7.

On May 18, 2011, at a convention about the severe shortage of doctors in the State of Israel, Doctor Leonid Edelman, Chairman of the Israel Medical Association, warned that the situation is worsening, adding that this phenomenon impacts every ward, in every hospital. *"The shortage of doctors affects patients' treatment, causes errors in treatment, and claims of negligence. Each and every hour, patients pay the price for this shortage… One can feel it daily on the wards; the effect of this lack on the system… Patients die because there aren't enough doctors. They die because an exhausted doctor works ten shifts a month, and because there is no doctor*

available when surgery is necessary. A doctor in a clinic has five minutes for each scheduled patient – to review the medical record, assess the complaints, recommend treatment, and explain to the patient what is expected of him…."

F. The Israeli Healthcare System

While the Israeli healthcare system has its own unique local character, it adopts a Western clinical approach. It is important to understand the character of the Israeli system, as it is the context for this study.

Specific Characteristics of the Israeli Healthcare System:

- Mandatory healthcare insurance – according to the law passed in 1994, each and every Israeli citizen has mandatory healthcare insurance, paid as taxation, calculated as a percentage of the salary. Each citizen can join one of four Healthcare Funds to receive healthcare services. Maccabi is the second-largest healthcare fund in Israel.
- High level of computerization – almost all medical institutions utilize EMR (Electronic Medical Records) and many administrative processes are computerized. However, the efforts of the Ministry of Health to define a standard unified EMR have not yet borne fruit.
- The Ministry of Health holds a unique position as the regulator of the system and the owner of major parts of general hospitals, geriatric, and psychiatric hospitals.
- Three major brokers provide medical malpractice insurance, one of them (Inbal) to the governmental sector, and the other two to the four healthcare funds and the private sector (Madanes Group has more than 60% of the market share)
- Since the end of 2012, the Ministry of Health has mandated Risk Management and Patient Safety activities in every medical institution, defining the minimum human resources to be allocated and the basic working processes.

In 1996, the Israel Ministry of Health published the "Patients' Right Act," formally regulating issues that are associated with patient safety, such as

informed consent; mandating the management of medical records; review committees for adverse events; and more.

Parties active in the arena of promoting patient safety and risk management in Israel include:

- Ministry of Health – in 2012 the Ministry established a division to promote quality and safety in healthcare, thus becoming a dominant player in this arena
- Medical institutions – healthcare funds and hospitals are active in this field motivated by professional, ethical, moral, and fiscal factors
- Academia – provide a variety of courses in Patient Safety and Risk Management, some of which are mandatory to obtain a degree, such as in nursing and public health
- The insurers – insurers against medical malpractice claims are interested in decreasing the risk to patients' safety, and have become active in caregiver training and dissemination of knowledge compiled from adverse events
- IMA, Israel Medical Association – represents 95% of Israeli physicians; it promotes the interests of Israeli physicians and is deeply concerned with issues of Quality of Care and Patient Safety. IMA, was the main sponsor of the Israeli Patient Safety Forum, active since 2006 in promoting issues of wide interest to the Israeli Healthcare system e.g. Risk Management and Patient Safety education, development of Risk Management methodologies, and representation of the caregivers' perspective in open dialogues with the Ministry of Health
- Patients organizations – are interested in protecting the rights of patients, promotion of the "Patients' Rights Act" and speaking up for patients who were harmed by involvement in adverse events

G. The Maccabi Healthcare Fund

The Maccabi Healthcare Fund is the second-largest ambulatory healthcare organization in Israel, with more than 2,000,000 patients, 5,459 physicians and 1,438 nurses, providing ~18,000,000 medical encounters annually.

The core of Maccabi Healthcare Services consists of independent salaried physicians who provide medical services to Maccabi members. The independent physician staff is comprised of primary care physicians, consultants in various medical fields, and specialists in a broad range of medical specialties. In addition to the independent physicians, Maccabi invests efforts and resources to provide ongoing professional education and to update its physicians on innovations in the realm of medicine, thus enabling Maccabi members to benefit from the most well-informed and advanced medical treatment.

Maccabi has a decentralized organizational approach. Its six regional centers, including 150 branches and clinics, provide full access to Maccabi Healthcare services for all members throughout the country.

Maccabi provides:

- Dental clinics
- Assisted living centers
- Pharmacies
- Medical laboratories and hundreds of sample collection sites
- Complementary medicine clinics
- After-hours urgent care centers
- Mental health clinics
- Public and private hospitals and facilities
- X-ray clinics

Maccabi enables its members to access a broad range of specialized medical centers and consultants, including:

- Women's health
- Children's health

- Child development
- Eating disorders
- Treatment of hypertension
- Gastroenterology Ambulatory surgery
- Occupational medicine
- Endocrinology and diabetes
- Ophthalmology
- Rheumatology
- Pulmonary medicine
- Allergies
- Cardiology
- Mental health
- Gynecological centers

Maccabi enables its members to access a broad range of allied health services, including:

- Nursing clinics
- Hospital liaison nurses
- Social workers
- Family health clinics (Infant Care Centers)
- Physiotherapy
- Speech therapy
- Occupational therapy
- Psychologists
- After-Hours Urgent Care Centers
  After-Hours Urgent Care Centers operate throughout the country, after regular business hours. Although members pay a user's fee, which is standard practice in emergency medical services, the rate is lower than self-referrals to hospital emergency rooms.
- Pharmacies
  A network of more than 600 pharmacies throughout the country offer Maccabi members prescription drugs. Maccabi's network of

> pharmacies is the only one of its kind in Israel and one of the only pharmacy chains in the world which employs satellite technology. Through its link with the Amos satellite, the pharmacies immediately update each member's pharmacological file, thereby preventing the provision of contraindicated drugs or erroneous dosages. Maccabi's health division determines the policy of classifying drugs for procurement and supply to the pharmacies.

Maccabi owns the "Assuta Medical Services" – general and specialized hospitals and ambulatory services.

H. "When things go wrong"

Maccabi's attitudes and culture toward various issues of patient safety and Risk Management are widely described in the work of Tal and Lichtenfeld (2010) referring to the Aviation Risk Management Model (ARMM) as a benchmark for Maccabi. Maccabi has adopted many ARMM principles e.g. "no name, no blame, no shame," transparency, disclosure, etc.

Clark[1] addresses the issue of physicians involved in an adverse event participating in disclosure, mediation, and the settlement process with patients and their families by asking a series of challenging questions:

"What are their experiences? When open disclosure is absent, physicians often worry and wait to be sued, which is often followed by lengthy, angry, and expensive litigation. How could this be different so that physicians have the opportunity to talk to patients/families, offer an explanation, listen to patients' experiences, and learn from those conversations? How could open disclosure become the standard? Wouldn’t such open disclosure conversations assist physicians in forgiving themselves? How could physicians play an active role in the entire process rather than something akin to a bystander in the immediate aftermath of an AME?

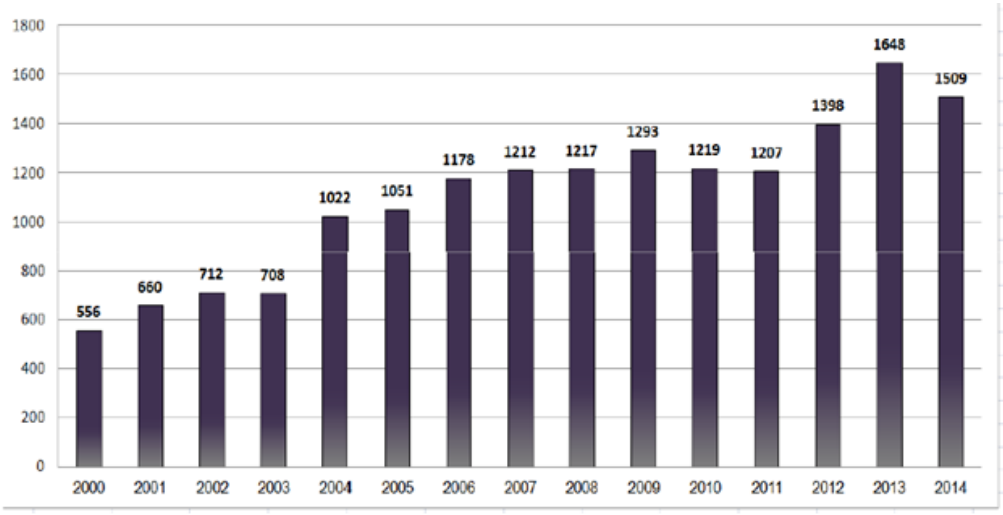
1 This article was sent to me personally by Dr. Kathleen Clark via Professor John Rijsman on 17/10/2016

This thesis may suggest a partial answer to some of the above questions, mainly those dealing with the reluctance of some physicians to participate in the process.

I have found indications of avoidance behavior among physicians involved in adverse events that they caused. This may indicate that after being involved in an adverse event physicians prefer to interact less with patients generally, and specifically with those involved in the adverse event. I suggest that his specific assumption be studied further.

Maccabi is insured against malpractice claims mainly by the Madanes group.

The histogram below presents the number of claims in court by medical institutions insured by the Madanes group in the years 2000-2014 (based on the data published in http://www.mrm.org.il/?categoryId=93748). It is evident that during this period of time the number of claims increased almost threefold, from 556 claims in 2000 to 1,509 claims in 2014. It should be noted that the growth in the number of claims reflects the changes in the attitudes of patients and courts toward malpractice, as opposed to changes in patient safety and quality of care, which are considered to have improved in Israel in recent years.



In August 2000, three years after the Maccabi RMD was established, Maccabi's CEO published a policy that provides managerial immunity to every physician who voluntarily reports an adverse event that he/she was involved in. The idea is to encourage the reporting of adverse events and stress the importance of "lessons learned," while acknowledging physicians' difficulties to report their own shortcomings. In later years the managerial immunity was broadened to include additional sectors such as nursing and physiotherapy.

Chapter 2 - Review of Literature[2]

A. Medical Errors and their Implications on Physicians and Their Functioning

"To Err is Human," a report issued in December 1999, by the National Academy of Medicine (until 2015 it was called the Institute of Medicine) in the United States, reveals that every year, between 44,000 and 98,000 of the deaths in the U.S. are caused by medical errors. It is estimated that in Israel 2,500 people die in hospitals every year as a result of preventable medical errors (Rosenblum, 2004).

In an article published in 1994, Leape notes that while "to err is human," even in an entity as complex as the health system it is possible to prevent some errors and adverse events. However, he adds that it would be unrealistic to imagine that all the errors can be prevented. The traditional perception of the medical profession as one where the standard for error is zero is of course unrealistic, and creates a situation in which physicians tend to underreport adverse events.

I have observed the response to errors in the medical system as it evolved from an attempt to simply ignore them to a culture in which learning from each and every mistake is a must.

As Conway and Weingart (2009) write, it is important to note that when a medical error occurs, caregivers adopt a respectful attitude toward the "first victim" or patient, and this is evident in their reports of the event, that comprise the steps they have taken to avoid recurrence, and their apology to the patient for any suffering that was inflicted. Less is done for the "second victims" of medical errors – the caregivers who were involved in the adverse event in the course of treatment.

From my personal experience as a Risk Manager, who is contacted by physicians involved in an adverse event, I can report that in the initial period

[2] In this section I present the relevant literature and from time to time my individual reflections based on my personal experience as a risk manager at the Maccabi Health Care Fund.

following that involvement the emotions evoked are very harsh indeed. A few years ago, after inadvertently harming a five-year-old boy while operating on his tonsils, an otorhinolaryngologist contacted me, and said, *"I am an otorhinolaryngologist … I believe I have made an error while operating... I don't want to be a doctor anymore... Can you help me?"*

I still recall his intense emotional distress – his sorrow and frustration, his shame and loss of self-confidence with respect to his performance and functioning as a practicing physician.

Being involved in an adverse event can cause the caregiver tremendous stress and anxiety both at work and outside the workplace. These may lead to depression, emotional exhaustion, a significant decline in quality of life, loss of confidence and self-esteem, guilt, self-criticism, and fear. Caregivers may become less efficient at work, suffer from insomnia and experience deterioration in their relationships with their colleagues, as well as a declining self-image (West, 2006).

When I received the phone call from the otorhinolaryngologist, I thought about how the call he placed to me was his first and most significant step toward dealing with his involvement in the adverse event. I shared this insight with him, adding that often when one chooses to remain alone with one's thoughts following a traumatic event, it is harder to process and cope with the event and its implications.

Personal experience has taught me that there is no substitute for professional help when it comes to processing the trauma of an adverse event. In a session with a professional the caregiver receives emotional support, assistance in "managing" the consequences of the event, and an initial analysis of the factors that contributed to the occurrence of the event. The conversation with the Risk Manager is "a safe harbor" for the caregiver, a first step toward recovery and a return to routine practice.

I was involved in an adverse event "by proxy" some years ago, via my husband, who was already a practicing gynecologist. At the time of his

involvement in an adverse event the field of Risk Management was undeveloped and its focus was on the medical issues.

Back then, the accepted medical professional culture demonstrated zero tolerance for adverse events. This meant that the option of professional help was not available to my husband, who had no tools with which to deal with the resulting psychological trauma. I did my best, as his spouse and partner, to support him emotionally and to suggest the few strategies I had learned about from my initial contact with the Risk Management Department. However, he did not receive any support from the health system and bears the scars of that experience and his long, solo recovery to this day. We often agree that he would have returned to optimal professional functioning so much sooner had we only known then what we know now.

While a supportive home environment may form part of a safety net for a caregiver, support at work is a major necessity. In the absence of such support it is extremely difficult to cope with the consequences of the event and return to efficient, professional functioning.

A classic expression of poor professional functioning is the choice to practice defensive medicine in an attempt to avoid responsibility, should there be a charge of medical negligence. The practice of defensive medicine is not aimed at assuring the patient's safety (Anderson, 1999). Defensive medicine may be manifested in two ways. One manifestation is "over-safety," that is, conducting extra consultations and extra check-ups to reduce negative results. The second is avoidance behavior, expressed by the caregiver attempting to avoid confronting a similar event again. Both these behaviors were found to be harmful and ineffective for patients.

Most of the studies in the field of medical error have been conducted at hospitals (Leape, 1998). Plans for risk management in community medicine are relatively new, and their range of activity is narrower compared to those in effect at hospitals. The working environment in the community is very different from that at the hospital, as it is based on the doctor working "solo." The clinics are discrete, isolated units with a doctor, sometimes a secretary, and the patients, and usually no additional staff. In difficult periods, such as those

following involvement in an adverse event, this solitude becomes more acute and the need for a supportive environment of peers and professionals is crucial.

In light of the above, I view my vocation as a tremendous opportunity to more deeply comprehend the phenomenon of doctors' involvement in an adverse event in the community, and also to develop professional tools to effectively assist the caregivers involved.

B. Medical Errors and Adverse Events

An error is defined as the failure to complete a planned action (performance error), or the selection of a mode of operation that is unsuitable to achieve a target (planning error). The term "medical error" adopts this definition with reference to an action *that involves some medical procedure* (Reason, 1990).

The literature offers several definitions of an adverse event that occurs in the course of medical treatment. According to the most commonly used definition, an adverse event is an unexpected event that occurs in the course of medical treatment, with the potential to cause the patient physical or mental injury (Wilf-Miron & Levinhoff, 2001). More specifically, an adverse event in medical treatment refers to unintentional harm caused by the medical treatment rather than by the progression of a disease, where such damage is sufficiently serious as to extend to hospitalization, or cause temporary or permanent disability to the patient. This definition of an adverse event does not include side effects that may arise as a result of the use of various medications (Localio, 1991).

In the decade since the American publication of the *To Err is Human* report (Kohn, Corrigan, & Donaldson, 1999), awareness on the part of the medical community and the general public of the scope of damage caused by medical errors has increased significantly. This report is based, among other sources, on a study that examined the scope of damage caused by medical errors in New York hospitals from an insurance perspective (Kohn, Corrigan, & Donaldson, 1999). Based on this study, a numerical estimation was calculated

for the first time, which showed that 100,000 individuals die as a result of medical errors in American hospitals every year, accounting for four percent of annual mortality in the U.S. As if these shocking statistics were not sufficiently worrying, it is estimated that each year, more than one million individuals suffer a non-fatal injury as the result of mishaps in medical treatment.

Unfortunately, until recently, the medical profession has been characterized by a normative professional and social image that rejects the very possibility of errors occurring to a patient during treatment administered in a healthcare setting. Historical efforts to create a professional image of precision, organization, security, and skill, have linked errors with a lack of clinical professionalism. As a result, the medical staff treats any error committed by one of its members as a catastrophe, and adopts an extremely negative judgmental attitude toward the individual who errs (Raines, 2000). It has been argued that in an environment in which physicians aspire to outstanding standards of performance, to the point of perfectionism in medical treatment, patients and other members of the medical staff expect them to be free of error (Waterman et al., 2007), but as Leape (1994) states, while some of the medical errors and adverse events can be prevented in a complex healthcare system, it is not realistic to think that they can be prevented in entirety.

The UK Commissioner of Health stated that intolerance of errors is effectively illustrated by three main problems that can inhibit learning from mistakes: A culture of blame where there is a fear of reporting errors; inattention to errors occurring in the course of medical procedures; and insufficient self-inspection of medical teams. These all lead to few admissions of guilt (Kroll, Singleton, Collier, & Jones, 2008). While today most medical institutions maintain Risk Management and Patient Safety units that operate to minimize exposure to risk and learn lessons from medical errors and adverse events (Gindy, 2008), the traditional intolerance to errors significantly challenges these organizational efforts.

There is now growing recognition that the prevalent approach to errors must be changed, first and foremost by understanding that errors are an

unavoidable part of human behavior, and therefore cannot be eliminated in entirety. Efforts should be made to establish a process of learning from errors, which may improve future actions (Koren, Goldberg, Shinder-Nekhamkin, Traister, Fridman, Azuly, & Sharabani, 2007). These findings are in line with the conclusions of a study by an American medical institution that found that errors that occur in the course of treatment are not necessarily caused by clinicians' poor performance but by organizational faults in the work environment (Wolf et al., 2006).

C. The Second Victim Syndrome

While the "first victims" of adverse medical events, are the patients, healthcare providers often become "second victims" of serious adverse events. Second victims are defined as healthcare providers who are involved with the event or the medical error, and as a result experience emotional and sometimes physical distress (Alford, Mahone & Fielestien, 1998; Anderson, 1999). Even healthcare organizations can become victims of adverse events (third victims) – and the impact of the event on the organization depends on the response and behavior of organization leaders (Denham, 2007).

Since the second victim phenomenon was first described by Wu (2000), Scott et al. (2010) have offered a detailed definition: "a healthcare provider involved in an unanticipated adverse patient event, medical error, and/or patient-related injury, who became victimized in the sense that the provider is traumatized by the event. Frequently, second victims feel personally responsible for the unexpected patient outcomes and feel as though they have failed their patient, second-guessing their clinical skills and knowledge base." Clancy (2012) argues that healthcare providers can become second victims in two ways: As a result of a self-inflicted emotional response to the event, and as a result of a review or judgment of an oversight body that reinforces that internalized self-criticism.

While Landerer et al. (2006) estimate the prevalence of second victims at 10.6% and Scott et al. (2010) provide a figure of 30%, Wolf et al. (2000) suggest 43.3%. Nearly half of all medical care providers may experience the impact of an adverse event as a second victim at least once in their career.

According to a survey of workers at University of Missouri Health, one in seven staff members reported an adverse effect in the past year that caused personal problems (Hall & Scott, 2012). More than one half of the survey participants at Johns Hopkins Hospital indicated that following an adverse event they experienced feelings of anxiety, depression, and fear with respect to their ability to perform their jobs properly (Alford, Mahone, & Fielestien, 1998; Anderson, 1999).These figures may, however, underestimate the prevalence of the second victim phenomenon because most healthcare providers are unaware that the problem is widespread. "There is a general lack of recognition by both individuals and healthcare organizations of the magnitude of the second victim problem" (Edrees et al., 2011). This may be the reason, according to Seys (Seys et al., 2012) that it is likely that the number of second and third victims has been underestimated.

According to Asland and Forde (2005), 17% of the physicians involved in adverse events experienced problems such as anxiety, depression, or concern about their ability to perform their job (Hall & Scott, 2012), and also reported that an adverse event had had a negative impact on their personal lives in the past 12 months. Others have reported a decrease in quality of life scores and empathy (Ibid.). Shanafelt et al. (2010) wrote that of surgeons who reported that they had committed a medical error in the past three months, 16^ had entertained thoughts of suicide (Hall & Scott, 2012).

The distress engendered by involvement in adverse events may affect providers in any healthcare profession, and at any point in their career (Hall & Scott, 2012). In general, responses of health providers from different professions seem more similar than different (Hall & Scott, 2012); (Rassin, Kanti & Silner, 2005); (Wolf, Serenbus, Smetzer et al., 2000); (Arndt, 1994); (Crigger & Meek, 2007). A study by Scheirton, Mu and Lohman (2003) found strong emotional responses to medical errors. The words used to describe the reactions were: Awful, guilt, fear, concerned, sleepless nights.

The second victim phenomenon is described in similar terms in literature from many countries including the U.S., Canada, the U.K., Norway, Germany, Switzerland, New Zealand, and Australia (Hall & Scott, 2012).

Scott et al. (2009) describe a six-stage recovery trajectory for second victims: (1) chaos and accident response (2) intrusive reflection characterized by 'what if' questions (3) restoring personal integrity by looking for personal and professional support to tell their experience or understand its impact on them (4) enduring the inquisition from others and wondering about the impact of their mistake (5) obtaining emotional 'first aid' (6) moving on or dropping out, i.e. surviving or thriving.

The post-incident trajectory for second victims can be to recover and even thrive, to survive with residual symptoms, or even to leave the healthcare industry (Edrees et al., 2011). According to Scott et al. (2010), as many as 15% of second victims seriously consider leaving their profession. Nonetheless, "few studies document the ways in which being a second victim shapes a nurse's career trajectory" (Jones & Triber, 2012).

D. Second Victim Responses

Second victim responses can be emotional, cognitive, and behavioral (Wolf et al., 2006). Behavioral responses may include taking responsibility, disclosure, and reflection about the case (Fischer et al., 2006). Physical symptoms may include: Fatigue, rapid heart rate, increased blood pressure, muscle tension, and rapid breathing (Hall & Scott, 2012).

Findings from numerous studies indicate that clinicians involved in medical errors and adverse events suffer from a host of emotional problems that deserve serious attention (Wu, 2000). Symptoms affecting second victims include: Guilt, anger, fear, inadequacy, loss of personal and professional self-confidence (Mayo & Duncan, 2004 in Jones & Treiber, 2012); and doubt as to their clinical competence and their ability to continue to work as a healthcare provider (Edrees et al., 2011). Clinicians have also reported reactions such as shock, helplessness, worry, depression, poor concentration and memory, intrusive thoughts, sleep disturbances, physical symptoms, and social avoidance (Edrees et al., 2011).

According to Hewett (2001), medical providers experience intense negative feelings after involvement in medical errors, including fear (fear of lawsuits

and damage to reputation; fear of punishment, job loss, and censure), guilt, anger, embarrassment, humiliation (Christensen, Levinson, & Dunn, 1992), self-doubt, disappointment, self-blame, shame, and fear (Newman, 1996).

One of the largest and most comprehensive studies of medical errors surveyed physicians in the U.S. and Canada who reported the following problems after involvement in an adverse event: Anxiety about future errors, loss of confidence, difficulty sleeping, reduced job satisfaction, harm to their reputation (Waterman, Garbut, Hazel et al., 2012). Jones and Triber (2012) write: "The world for a second victim changes and oftentimes causes the victims to reassess their entire professional future."

Similarly, findings of a study by Kanti, Rassin, and Silner (2005) indicate that in the initial period after the commission of the error, physicians stated that they had an immediate response of stress that was subsequently accompanied by fear of punishment and anger, guilt, and loss of self-confidence. In the second period after the commission of the error, the error completely dominated the respondents' thoughts and they became obsessed with the error for days, in addition to fear of dismissal and a sense of isolation. The third period was characterized by sleep problems caused by incessant thoughts about the event, excessive attention to procedure, focus on a single task, and inability to split attention.

Clinicians involved in an event that caused medical injury reported greater concerns about committing future errors, sleep problems, diminished self-esteem and professional image, compared to clinicians involved in an adverse event that caused no injury (Waterman et al., 2007).

Findings of a study about medical interns point to a connection between emotional response, severity of event, and sense of personal responsibility. All the interns in this study reported that the intensity of their emotions was linked to the severity of the injury to the patient and to the extent of their involvement in the event (Engel, Rosenthal, & Sutcliffe, 2006). People involved in an adverse event may feel a loss of control over what they are experiencing. This feeling, which causes clinicians to feel as if they have no control or influence over reality, leads to a loss of interest in things that were

previously meaningful, including relationships with colleagues and interest in the workplace (Alford et al., 1998; Waterman et al., 2007).

E. Factors Affecting Second Victim Responses

While all healthcare providers may respond to adverse events as second victims, events that are disturbing to one healthcare provider may not necessarily be stressful to another (Hall & Scott, 2012).

The groups that were more likely to suffer from negative emotional consequences of involvement in an adverse event were female physicians, physicians who were dissatisfied with their past disclosure of an adverse event, and physicians who believed that they had a high risk for a malpractice lawsuit (Waterman, Garbut, Hazel et al., 2012). Other studies found that physicians' personality traits and beliefs also affected the degree of their emotional stress following involvement in an adverse event (Christensen, Levinson, & Dunn, 1992).

Studies have found that physicians with different modes of reasoning respond differently to an adverse event. For example, physicians who feel comfortable with uncertainty or who do not believe that medicine is exclusively responsible for the treatment outcomes of patients developed a weaker emotional response to adverse events. In contrast, physicians who consider their own errors as a reflection of their treatment skills develop a strong emotional response to adverse events (Waterman et al., 2007).

Reactions are influenced by the outcome of the error and the degree of personal responsibility for the adverse event (Engel, Rosenthal, & Sutcliffe et al., 2006; Levinson & Dunn, 1989 in Seys et al., 2012).

Reactions are intensified where a prior belief in infallibility exists ("good providers never make mistakes") and where the error seems to be more related to individual actions than to system issues (Hall & Scott, 2012).

Female second victims tend to report significantly more distress than males, experience more loss of reputation from colleagues, are more concerned about receiving blame (Seys et al., 2012), and more likely to feel guilty. Also,

female second victims are more motivated to discuss the error (Kaldjian et al., 2008; Muller & Ornstein, 2007; Wu et al., 1991). However, Hall, and Scott (2012) argue that in the second victim study by the University of Missouri, healthcare providers responded similarly regardless of professional background, gender, or years of experience (Hall & Scott, 2012).

Students and trainees can also be deeply wounded by adverse events according to Martinex & Lo (2008 in Seys et al., 2012), suffering blows to their clinical confidence and self-esteem (Wu, 2012). In a study of interns in France (Wu, 2012) participants reported: Involvement in adverse events made them feel incompetent; they developed a highly negative self-image; many wanted – but did not receive – an objective analysis of the incident and their role in it. In a large study of medical errors and their impact (Waterman et al., 2007), 3,171 interns in internal medicine, surgery, family medicine, and pediatrics were studied. Study findings indicated that 61% feared making an error in the future, 44% reported diminished self-confidence and confidence in their abilities as a physician, 42% reported diminished ability to sleep, and 13% reported a decline in their professional self-image. No demographic differences were found in this work.

According to Jones and Triber (2012, p. 287), "The environment plays a pivotal role in the overall concept of victimization," and Hall and Scott (2012) write that professional training and culture may influence the reactions of healthcare providers. For example, providers in blame-oriented environments may be more likely to turn to denial, distancing, and discounting the impact of the error. "The errorless imperative (Ibid.): Healthcare environments such as those in which perfection is expected and errors are considered anomalies, create a culture of blame and fear of reprisal in healthcare providers involved in errors."

Jones (Jones & Triber, 2012) proposes that the intensity of second victim effects is a function of caregivers' sense of control over their workplace environment. He found that second victim effects are especially egregious for nurses because of "the paradox of great responsibility and little authority or participation in decision-making processes (including processes related to

investigations of errors, analysis of errors, and quality-improvement processes)" (Jones, p. 289). Nurses operate in a highly fluctuating structure of work (number of patients, medications administered, as well as administrative changes that may occur on a daily basis), which compels them to multi-task (assuming both routine responsibilities and additional unplanned responsibilities) as a common reality of their work environment. This inherent feature of nurses' work has been labeled "complexity compression" (Kirchenbaum et al., 2007 in Jones & Triber, 2012) to describe "what the nurses experience when expected to assume additional, unplanned responsibilities while simultaneously conducting their multiple responsibilities in a condensed timeframe" (p. 86). Furthermore, nurses' participation in decision-making processes, including processes related to investigations of errors, analysis of errors, and quality-improvement processes (Cook et al., 2004, in Jones & Triber, 2012) is typically limited, creating a sense of little control over their work environment, and powerlessness.

Generally, findings of studies that examine factors which predict the behavior of medical staff, particularly that of nurses, indicate that nurses often feel that they lack the freedom of action and authority to make what they see as necessary independent decisions, their hands being tied by organizational and clinical divisions of labor (Cogan & Tabak, 2000).

F. Long-Term Effects

The emotional effects of involvement in an adverse medical event can persist for months and even years (Christensen, Levinson, & Dunn, 1992), especially if the provider is involved in a malpractice suit or an administrative investigation. (Hewett, 2001) Involvement in an adverse medical event can affect job performance and even result in psychiatric illness, Post-Traumatic Stress Disorder (PTSD), depression (Stanton & Caan, 2003, p.18), substance abuse (Schernhammer & Colditz, 2004), and even suicide (Schernhammer, 2005). Physicians reported reduced quality of life and increased burnout (West, Huska, & Novotny, et al., 2006). Therefore, the study argues that involvement in an error can lead to a crisis, including depression.

There is a risk that the experience can become a chronic stressor and progress to symptoms typical of PTSD (Edrees et al., 2011; Rassin et al., 2005 in Jones & Triber, 2012; Waterman et al., 2007). Longer-term consequences are indistinguishable from PTSD: Recurrent re-experiencing of the event, avoidance, emotional numbing, chronic signs of hyper-arousal including sleep disturbances, irritability, poor concentration, diminished memory, withdrawal, depression, impaired social functioning, negative effect on personal and professional relationships (Edrees et al., 2011), burnout and/or depression (West et al., 2006).

G. Responsibility vs Blame

There are several levels of accountability, which are dependent on the level of awareness and the quality of consciousness of the person who assumes responsibility. Similarly, there are various levels of responsibility that differ in nature and scope, depending on the demands or needs of the system on whose behalf the responsibility is assumed (Mello, Studdert, Kachalia, & Brennan, 2006).

For any event that occurs, a person can accept either responsibility or blame. These are two distinctly different actions. Blame refers to what has occurred in the past, how "wrong" the person was, how he "screwed up," and how it all would have been different if only he had behaved differently. Blame is expressed in self-castigation or by offering excuses and justifications. Responsibility refers to the future and pertains to what the person intends and is able to do from the present moment onward with regard to a specific event. Responsibility can be expressed as an apology, a future promise, specific action, or practical decisions regarding the future. Accountability means the obligation or willingness to accept responsibility or to give an account or report of one's actions, and the results, or omissions performed under one's authority, or according to one's assurance. Whoever had or has a right or the ability to make a choice in a specific matter and made the choice, should bear the consequences of the choice or non-choice (Webster Dictionary, 2012).

However, according to Schwappach and Boluarte (2008), a sense of responsibility for an adverse event inserts the physician into a cycle that

comprises work burnout, depression, and diminished empathy for patients. This process reduces treatment quality and increases the risk of additional medical errors.

Bancroft (2007) identifies two kinds of guilt. He describes "healthy guilt" as the uncomfortable feeling that reminds a person of the fact that he is human and fallible. Therefore, despite the fact that this feeling is unpleasant, it may be a source of future improvement. "Unhealthy guilt," on the other hand, is defined as a negative response to perceived inadequacy after the clinician discovers that he harmed a patient during treatment, and may include seclusion, concealment of information, and refusal to assume responsibility. Physicians have a strong tendency toward "unhealthy guilt" due to their training, which conveys expectations of perfection and focuses on clinical knowledge rather than ethics, communication skills, or personal growth. At the same time, a trained, skilled staff can help a physician to quickly shift from unhealthy to healthy guilt, through mediators and by encouraging disclosure and admission. Findings of several studies that examined the responses of medical staff to errors they made indicate a high level of guilt and fear, but also reveal a willingness to learn and improve following the commission of the errors (Scheirton & Lohman, 2003).

H. Professional Performance Following Involvement in an Adverse Event

Many studies support the hypothesis that work- and organization-related stresses can have damaging effects on both employee health and on work outcomes (Bhagat et al., 2010). While the relationships between work stress, coping, and work outcomes have not yet been clearly identified, it has been found that situational factors have a mediating and/or moderating effect on the relationships between organizational stress and important work outcomes (Bhagat et al., 2010). Nonetheless, few studies document the impact of being a second victim on caregivers' career trajectories.

Following an adverse event, physicians' dissatisfaction at work, self-doubt, insecurity, and traumatic stress, together with a lack of structured support, may have a deleterious effect over time on their ability to provide adequate

care (Powell, 2006). According to Angvik (1995), all these emotional outcomes can lead to a vicious circle in which the crisis triggers a cyclic response that reinforces negative emotions and adversely affects performance.

In a study on the impact of personal life stressors and work stressors on the professional functioning of psychologists at work, impaired work performance was defined as a diminished performance capability stemming from a host of factors (including judgment, competence, ethics, and reliability) and expressed in the practitioner's impaired practical ability and credibility (Pooler, 2010). The study suggests that adverse events also negatively impact organizational performance and have significant financial implications for hospitals (Tucker, 2004).

Most studies on the impact of stress on physicians' work performance are based on self-report measures. Miller-Burke, Attridge, and Fass (1999) investigated the effects of a traumatic event on subsequent performance in the workplace. They found that for many employees, experiencing a traumatic work event was a trigger for mental stress, deterioration of health, and impaired ability to function at work (measured by absenteeism or limited activity, for example), and impairment in personal life functioning.

These findings were supported by a study that shows that involvement in an adverse event impaired physicians' ability to function at work by causing diminished self-confidence, increased work dissatisfaction, and increased role-related distress (Waterman et al., 2007). A similar account emerges from a survey of GPs who were questioned about an adverse event. Apparently, the physicians experienced self-doubt (96%), disappointment (93%), guilt (86%), and shame (50%). These feelings emerged because for people in the positions they hold there is an expectation of zero mistakes (Newman, 1996). Surgeons and internists, more frequently than pediatricians, reported a decline in work satisfaction after involvement in a serious adverse event (43% and 34%, respectively). Even physicians involved in adverse events with no injury reported that the event affected their performance at work (Waterman et al., 2007).

However, findings from other studies suggest that impaired performance is not a necessary result of involvement in a medical error or adverse event. Findings from a study by Christensen et al. (1992), show that involvement in an adverse event may enhance rather than impair performance. Following involvement in an adverse event, physicians reported that they learned from their mistakes and improved their work performance and the quality of medical care they provided to their patients on several levels: They corrected work procedures, made changes to medical management procedures, paid more attention to their own experiences and pace of work, and made changes to instructions to interns and to doctor-patient relations.

A study by Scheirton, Mu, and Lohman (2003) similarly found that clinicians involved in medical errors appreciated the chance to learn from their mistakes and improve professionally. Others stated that after committing an error they learned to be more cautious and more willing to listen to what their patients had to say, and also that they used what they learned from their mistakes to educate others. Many clinicians considered honesty the solution to a medical error. They stressed the importance of full and proper disclosure. When clinicians followed this practice, they generally received supportive responses from their colleagues who offered encouragement and expressions of care. The respondents agreed that following the commission of an error they changed their behavior.

Nurses have reported positive effects of involvement in an adverse event. They stressed that they were able to be more patient with their peers after the event, and were more attentive and careful about work procedures (Schelberg & Nord, 2007).

In a study of 40 pilots who had been involved in aircraft accidents – commissioned as part of a flight safety program for the Swedish Air Force – Pollack (2011) claims that the majority of the pilots stated that they had a somewhat changed attitude toward flying and regulations following an accident: They were more aware of the risks, and initially after the accident flew with greater safety margins. However, after a while most had reverted to their pre-accident performance habits.

I. Meaning and Scope of Documentation in the Doctor's View

Medical documentation serves as a good defense against claims of medical malpractice and also reflects the doctor's belief in and expectations of the efficacy of the care and treatment that he provides. Efficient records reflect the steps in the decision-making process of the care provider and the patient. (Weed, 1969/2015) When a person is harmed by an irregular event, or suspects malpractice, he asks to see his medical records. Often, a patient who has been harmed discovers that his medical records are lacking, and in such cases the consternation is great. The importance of the medical records in such cases, and in medical malpractice claims, is significant for both the care provider and the patient. For both doctor and patient, the medical records present the current state of events as derived from the patient's condition. For the doctor, the medical file records the development of the illness and the effects of the treatment on the patient. It grants the physician medical clarity and helps to avoid causing harm or committing medical malpractice during the provision of care. Missing medical records have been, and will continue to be, excellent fodder for medical malpractice claims, as they are entered as evidence of a flaw in the medical care which may allegedly be responsible for the malpractice and the harm caused (Medical Protection Society, 2013).

Courts have also begun to understand that medical documentation is crucial when examining cases concerning the behavior of doctors in our current reality of complex medical procedures and possibilities and the multiplicity of claims. One example is a verdict arrived at following a patient's claim about damage caused to him due to the misdiagnosis of his stomach cancer. The judge determined that there should be a proper balance between the significance of the medical documentation and the practice and trust that characterize the relationship between patient and care provider. This ruling could contribute to preventing the practice of defensive medicine, which is damaging to society in general and patient-care provider relations in particular.

The lack of appropriate balance could result in doctors investing their resources and energy in the documentation of each and every action, even the most marginal, in order to have a ready defense against a possible

lawsuit, at the expense of investing their efforts in medical treatment and building trusting relationships with their patients.

This lack of balance leads to a situation in which there is undue pressure on doctors, who may feel they must choose between investing in everyday practice and the need to spend sufficient time recording and reporting in an attempt to protect themselves. The myriad details and actions involved in every operation and medical treatment may "get in the way" of the development of deeper, more trusting relationships between care providers and their patients. However, it is, of course, clear to all that documentation of major medical actions and clinical measures, and the discussions held by the various medical teams regarding diagnosis and treatment possibilities, are absolutely necessary (Medical Administration Circular, 1996).

J. Coping with the Emotional Aftermath of Involvement in an Adverse Medical Event: Avoidance and Assurance Behaviors

Two of the major coping strategies that emerge from the literature in response to the emotional stress caused by involvement in an adverse medical event are a problem-focused strategy and an emotion-focused strategy. The study reported in Lazarus and Folkman (1984) and Bhagat et al. (1994, 2001) provides insights into the relative effectiveness of problem-focused and emotion-focused coping styles in dealing with role stresses.

In problem-focused coping (proactive efforts to alter or manage the situation), in dealing with the emotional stress of involvement in an adverse medical event the individual tries to understand what happened, and to learn from the mistake through information seeking, problem solving, and dealing with the problem itself (Chard 2010, in Seys et al., 2012); Christensen et al., 1992, Wu et al., 1993). In emotion-focused coping (defined as efforts to reduce or manage the distress associated with the stress experience, (Lazarus, 2000; Lazarus and Folkman, 1984) one way the individual may manage the emotional distress caused is by accepting responsibility for the mistake, recommending changes in practice to reduce future errors, meeting the patient or the family, talking with medical colleagues and with family and friends, seeking social support, distancing him or herself, exerting emotional self-control, or adopting escape/avoidance

techniques (such as avoiding talking or thinking about the incident, or avoiding reminders of the incident). It has been noted that it is difficult for healthcare providers to continue to work while adopting avoidance coping behaviors, because they must return to the scene of the incident every day and treat similar patients (Kenney & van Pelt, 2005).

Some second victims adopt dysfunctional, as opposed to adaptive coping mechanisms to deal with their involvement in an adverse event, such as seeking solace in alcohol or drugs (Goldberg et al., 2002; Scott et al., 2009; Wu, 2000).

One interesting approach to understanding the relationship between work stress and coping is to examine cultural and situational differences that may affect physicians' coping with involvement in adverse events. Collectivistic and non-Western societies cope with stress using strategies that are not commonly used in Western societies (Bhagat et al., 2010). This motivated Bhagat et al. (2010) to study differences in national characteristics and in decision latitude as possible moderating variables in the relationship between organizational stress and work outcomes. The results show that problem-focused coping is a better moderator in the individualistic countries and that emotion-focused coping is a better moderator in the collectivistic contexts.

In a cross-cultural study Karasek (1979) developed and tested a stress-management model of job strain with national survey data from Sweden and the United States: "This model predicts that mental strain results from the interaction of job demands and job decision latitude. The model appears to clarify earlier contradictory findings based on separated effects of job demands and job decision latitude. The consistent finding is that it is the combination of low decision latitude and heavy job demands which is associated with mental strain. This same combination is also associated with job dissatisfaction. In addition, the analysis of dissatisfaction reveals a complex interaction of decision latitude and job demand effects that could be easily overlooked in conventional linear, unidimensional analyses. The major implication of this study is that redesigning work processes to allow increases in decision latitude for a broad range of workers could reduce mental strain,

and do so without affecting the job demands that may plausibly be associated with organizational output levels."

While the major cultural dimension of individualism vs collectivism has been shown to be closely associated with job-related stress (Spector et al., 2002), most studies in this vein have been conducted in individualistic cultures, rather than in collectivistic cultures where group decision-making is valued. Individuals in different cultures perceive their jobs differently, which impacts on the effects of their involvement in an adverse event. Individuals from countries with higher GNP, larger geographic size, and larger populations reported higher levels of control over their jobs while individuals from countries with high population densities reported lower levels of control (Grob & Flammer, 1999).

According to Seys (Seys et al., 2012), findings indicate that involvement in adverse medical events is expressed in either constructive or defensive professional-behavioral changes. It should be noted that most studies on this topic use self-report measures and a minority use behavioral measures.

Common constructive responses include asking colleagues what they would have done in a similar situation, seeking advice, paying more attention to detail, making changes in practice to reduce future errors, increasing education, improving documentation, increasing observation of patients, listening more closely to patients, increasing vigilance, etc.

In contrast, one of the most powerful expressions of impaired performance is defensive medicine, which is the practice of diagnostic or therapeutic measures that are not designed to ensure the patient's health but rather to protect the physician from possible malpractice suits (Anderson, 1999). The fear of litigation is apparently the motivation behind defensive medicine.

Common defensive responses include doctors keeping an error to themselves, avoiding similar patients, feeling less confident in their dealings with patients, feeling decreased trust/confidence in their abilities, entertaining thoughts about leaving medical practice, ordering more tests, and suffering from fear of committing another error.

It should be noted that it is difficult to present positive proof for the existence of this phenomenon of defensive medicine. A doctor who employs defensive medicine is concerned about protecting himself against possible future claims of malpractice. Studies indicate that this is the reason for the increase in the number of tests and treatments. Still, it is difficult to prove a unique causal connection to an increase in the number of doctors practicing defensive medicine although it is reasonable to assume that this is the case. Therefore, we rely on the personal perceptions and positions of the doctors. Studies held in various countries find that there is indeed an atmosphere of defensive medicine and in addition, one must pay attention to the empiric cases we encounter in which doctors refuse to make decisions independently and prefer to make decisions only with the (preferably documented) support of additional consultants and senior doctors (Medical Protection Society, 2013).

A study that includes hundreds of doctors, published in the *British Medical Journal*, showed that 30% of the General Practitioners in the sample fear accusations of malpractice. A total of 98% admit that their approach to their work is informed by the possibility that they may be sued. Almost 64% of the GPs in England indicate that the number of references to specialists and emergency rooms has increased in an unparalleled manner. Almost 25% indicate that they refuse to admit "at risk" patients, with complex conditions and a high probability of the emergence of complications (Summerton, 1995). Another study, held among 4,600 doctors in the U.S., reveals that 90% of the GPs, 81% of the surgeons, 71% of the internists, and almost 90% of the neurosurgeons refuse to accept patients considered to be at high risk (Wagner, 1990).

There are two types of defensive medicine: Assurance behavior and avoidance behavior. Assurance behavior includes performing additional, unnecessary tests so as to deter patients from filing complaints or medical malpractice suits by ensuring that there is documented evidence that the treatment given was based on the current standard of care (so that there are no grounds for potential legal action).

Assurance behavior on the part of the medical staff refers to its conduct as defined by standard professional procedures which constitute a directive framework that helps to improve performance, and leads to safer, higher-quality treatment and care.

Avoidance behavior refers to an individual learning to behave in a way that prevents recurrence of an unpleasant stimulus i.e. the individual takes action to ensure that it will not occur/be encountered again. It is important to note that, in contrast to flight, avoidance ensures that the unpleasant stimulus never occurs. This behavior was first documented in rats by the behavioral psychologists Skinner and Holland (1961).

Study findings indicate that one of the most frequent responses to failure is avoidance behavior, and, specifically, avoidance of behavior related to the event connected to the failure. In medicine, avoidance behavior occurs when caregivers refuse to participate in high-risk procedures (Studdert et al., 2005). Due to the prevalent motivation found in many physicians to maintain their self-esteem, physicians will seek to avoid recurrence of a sense of failure that may impair that self-esteem (Zeidner & Endler, 1996). Furthermore, failure and involvement in the commission of errors have a negative effect on functioning, and therefore these feelings may constitute increased risk in doctors' future professional encounters with patients (Waterman et al., 2007). The potential tendency of those involved in an adverse event to avoid performing similar actions in the future may become a fixed behavior that prevents learning and the practice of essential activities, and has been found to be potentially harmful to patients.

Defensive medicine is especially prevalent in emergency medicine and obstetrics, and other specialties high in litigation risks (Anderson, 1999). In a study designed to assess fears of malpractice litigation, career satisfaction, use of defensive medicine, and experience of malpractice suits among gynecologists, most participants increased the number of referrals to specialists to diagnose breast abnormalities (58.9%), and in the treatment of breast-related diseases (53.6%) as a result of concerns and fears of malpractice suits. Physicians who were sued for medical malpractice subsequently reported less career satisfaction

than physicians who were never sued. They were found to perform fewer surgical procedures and to increase the number of their diagnostic and therapeutic referrals related to breast cancer, and reported engaging in defensive medical practice more frequently (Anderson, Strunk, & Schulkin, 2011).

Several connections have been found between coping strategies and changes in practice: Coping strategies such as seeking social support and engaging in painful problem solving are significant predictors for constructive changes in practice, while accepting blame for mistakes and exerting self-control are predictive of defensive changes in practice. Further, a strong and significant relationship was found between avoidance and emotional distress (Chard, 2010, in Seys et al., 2012).

K. Second Victim Intervention Programs

Until recently, the response of healthcare organizations to statistics concerning medical errors and adverse events was to invest extensive efforts in systemically improving healthcare safety and the quality of care, and attempting to prevent future harm (Conway & Weingart, 2009). Little attention has been devoted to helping the healthcare providers involved in adverse events to cope with their emotions. This is interesting in view of the fact that 96% of Fortune 500 companies, as well as a large percentage of Global 1,000 companies, are aware of the adverse effects of work stress and offer employee assistance programs to support individuals and their families (Bhagat, Steverson, & Segovis, 2007).

Second victims' responses to involvement in an adverse event, including their post-incident career trajectory, have implications for the providers themselves, as well as for their healthcare organizations. Without adequate emotional support, maladaptive coping strategies such as defensive medicine may develop. Such strategies lead to isolation and have the potential to increase health costs and to harm patients (White, Waterman et al., 2008).

Physicians may have specific emotional needs in such circumstances. For example, in one study, physicians noted four needs following involvement in a medical error (Newman, 1996): (a) the opportunity to talk to someone about

the event; (b) reaffirmation of their competence; (c) validation of their decision-making process; and (d) reassurance of their self-worth.

When second victims were asked which supportive strategies would be most useful to them (Edrees, 2011), they most frequently said: Debriefing, stress management intervention, and an opportunity to discuss ethical concerns related to the event. The importance of the personal support of colleagues is also confirmed by a study by Pollack (2011), conducted as part of the flight safety program in the Swedish Air Force (referred to previously). Pilots involved in accidents stressed the importance of the involvement of their "immediate surroundings" to provide support after an accident, and considered the attitude of their immediate work unit (the squadron) to be the most important resource for coping successfully with the psychological effects of an accident.

To mitigate the negative effects of involvement in an adverse event for all stakeholders, it is therefore essential to develop a systematic support structure for second victims as they struggle with the emotional aftermath of their involvement in an adverse event (Edrees et al., 2011). Second victims require both emotional and informational support (MACCAY), and such responses are needed at both the individual and the institutional level (Wu, 2000). Without such support, second victims find it difficult to "move on" (Scott et al., 2010).

De Wit et al. (2013) emphasize that support for second victims is also society's responsibility, since the suffering of second victims affects not only the healthcare workers, but also their patients.

Lack of emotional support for physicians after involvement in an adverse event can impact physicians' future performance, but addressing the event properly can lead to successful emotional recovery (Scott et al., 2010). A lack of supervisor and organizational support exacerbates physicians' emotional burdens (Aasland & Forde, 2005) and inhibits physicians' abilities to experience learning and professional growth as a result of their involvement in an adverse event (Crigger & Meek, 2007). According to Hall and Scott (2012),

peer conversations are often cited as critical to gaining a better understanding of the event and moving on with professional work (Hall & Scott, 2012). It has also been found that disclosure of the mistake can have a positive impact on the emotional stress of the second victim (Wu, 2000; Wu et al., 1991).

In a study of nurses, lack of support and feedback from management following commission of a medical error exacerbated the nurses' emotional responses and impaired their ability to perform their role and fulfill their duties (Alford, Mahone, & Fielestien, 1998).

As we see, management support and supervisor responses play an important role in nurses' coping with involvement in an adverse event (Martinez & Lo, 2008; Schelbred & Nord, 2007). Studies that examine the impact of managers' responses to nurses involved in an adverse event find that nurses who received no feedback from the organization and from their supervisors suffered from a sense of despair and professional burnout, which had a negative impact on their performance at work (Alford et al., 1998; Schelbred & Nord, 2007).

In the world of medicine, second victims have several potential sources of support: (1) emotional support from others in the workplace, such as peers, direct supervisors, senior management, and even the support provided in the form of forgiveness by the patient and the patient's family; (2) Family support, as evidenced by Engel, Rosenthal, and Sutcliffe (2006), who found that talking to family and friends, while also important, was less important than the support of colleagues; and (3) professional support, provided by hospital Risk Management Units, legal departments or psychologists, or private attorneys (Powell, 2006; White et al., 2008). Nonetheless, in the absence of an integrated, structured, organizational system of response, these sources typically fail to provide the full range of emotional support that the second victim needs to overcome the emotional implications of involvement in an adverse event and return to his or her regular level of performance. For example, it is difficult to organize support groups, because physicians feel exposed and vulnerable discussing concerns in the presence of their peers (White et al., 2008). Professional support by Risk Management or legal units

in healthcare organizations is typically focused on the physicians' legal interests rather than on their emotional needs (White et al., 2008). Often, support providers have not undergone any formal training that prepares them to address the emotional needs of the physician following involvement in an adverse event.

The fact that many physicians feel that they do not receive adequate support from their organization when they are coping with the stress associated with involvement in an adverse event (Waterman et al., 2007) may be attributed to the paucity of organizational systems that respond to adverse events by providing support to caretakers to help them to cope with the accompanying emotional processes (Nelson & Beyea, 2009; Powell, 2006). According to a white paper on "Respectful Management of Serious Clinical Adverse Events," published by The Institute for Healthcare Improvement (IHI) in October, 2010 (Conway, Federico et al., 2010), many healthcare organizations have no institutionalized response to adverse events. According to Pratt, "one of the reasons that healthcare organizations do not routinely offer emotional support might be that their leaders do not know how to develop and successfully implement a support system."

The following are some major issues and insights gleaned from various studies: Scott et al. (2010) reached the conclusion that an organization requires four years to implement a second victim support infrastructure. However, not only do most organizations lack the necessary training, policies, procedures, and support systems to help healthcare providers involved in an adverse event, but healthcare providers themselves are reluctant to avail themselves of support services even if they are available. This reluctance stems from several issues, including the stigma attached to professionals who seek mental health assistance and counseling (Edrees et al., 2011). Wu et al. (2013) claim second victim programs face an uphill battle in de-stigmatizing psychological aid for clinicians. And he cites another important obstacle to the recent second victim initiatives and strategies, which he describes as "uncertainty as to whether discussions conducted as part of second victim support processes will be deemed admissible as evidence in malpractice

litigation or other disciplinary proceedings" (De Wit et al., 2013, p. 853). To date, there has been no clear ruling on this issue.

Wu (2000) also refers to the issue of second victims and has presented a model for intervention with healthcare providers (Hall & Scott, 2012). The common elements leading to more success in second victim intervention programs include: Presence of a support system, policies or guidelines to govern the handling of adverse events, and an educational program to ensure providers are aware of the procedures and resources (Ibid.). Staff debriefing is included in many models at the unit level.

Wu (2000) points out the importance of institutional solutions that may be applied both on the individual and the organizational level. This multi-level approach ensures that even if employees do not avail themselves of formal support services, healthcare organizations can ensure that the appropriate informal emotional support is available. This may be accomplished by educating the staff about the types of symptoms a colleague might evince and about how to support a colleague involved in an adverse event.

Wu (2012) also stresses the obligation of healthcare institutions to establish mechanisms that prevent healthcare providers from becoming second victims. First responders are the most likely to become second victims. They should therefore be made aware of the second victim phenomenon and its emotional consequences. In a survey conducted at Johns Hopkins Hospital, for example (Edrees et al., 2011), almost half the participants were not familiar with the term "second victim." Clancy (2012) stated that "merely to acknowledge that we can become second victims of a patient safety event is a difficult concept for many of us and may have contributed to our reluctance to acknowledge the phenomenon" (p. 4). Therefore, organizational efforts are needed to increase institution-wide awareness of the second victim phenomenon.

Furthermore, healthcare providers should receive training in communicating with patients and their families following an adverse event, as well as information on the legal processes surrounding adverse events. Such efforts should be part of a system of guidelines for handling adverse events that is

supported by a policy of open disclosure, and grounded in "a humanistic approach to investigation that explicitly acknowledges the inevitability of second victims…" (Wu, 2012, p. 269). Involving second victims in an institutional mechanism designed to improve patient safety has been found to be a helpful coping strategy and an important step toward helping second victims to advance in their careers (Scott et al., 2010).

In the U.S., several organizations have developed formal support structures and coping mechanisms for healthcare workers who are second victims of an adverse medical event. These include the University of Missouri, University of Illinois, Johns Hopkins Hospital, and a private organization, Medically Induced Trauma Support Services (MITSS).

The University of Missouri created the "For You" program that provides care for second victims. The program is based on three tiers. The first tier provides unit-based personnel trained to identity situations that might lead to a second victim response and to provide immediate initial support to any staff member requiring assistance – effectively providing psychological first aid (De Wit); The second tier provides rapid 24-hour support and guidance to second victims in their respective specialties from experts in those specialties who have undergone training. The third tier ensures the availability of professional support and counseling services. Experience with this model shows that 60% of the second victims may have their needs met by the first-tier support (Hall & Scott, 2012). The University of Illinois in Chicago handles these issues on its own. Should an adverse medical event occur, the Risk Management Department conducts both a root cause investigation and an investigation to determine whether there are any second victims (Edrees et al., 2011).

Johns Hopkins Hospital established a multidisciplinary Second Victim Work Group by compiling an inventory of resources for second victims. Before designing its second victim support system, the hospital conducted a survey to assess the demand for second victim intervention. Participants agreed that second victims require compassion, support, and understanding following an adverse event, and that there is a preference for developing an institutional peer-support program, because of the stigma attached to seeking institutional

mental health assistance. Participants also preferred an intervention that was immediate and transparent (Edrees et al., 2011). This hospital also developed a second victim support program known as Resilience in Stressful Events (RISE), which comprises standard operating procedures, training materials, and on-call schedules. The primary aim of this program is to provide emotional first aid and information about additional available resources. The program is operated by a multidisciplinary team of peer volunteers who undergo training in crisis intervention.

The private organization MITSS (Medically Induced Trauma Support Services) developed a toolkit of resources to help organizations develop second victim unit support programs for healthcare providers (Edrees et al., 2011). The toolkit offers program elements that are modular, specific (they outline specific actions), and referenced (they are backed up with evidence or practices successfully employed by other organizations). The toolkit is free and can be downloaded or used online and includes an organizational assessment to evaluate organizational readiness for development of a support process, as well as a survey to measure the toolkit's utility.

All the above-mentioned models of organizational support offer second victims a safe environment in which they can share the emotional effects of an adverse event with their peers. Having such a system in place enables candid discussion and a compassionate attitude toward physicians in their workplace (Van Pelt, 2007; White et al., 2008).

De Wit et al. (2013) stress the need for clear legislation to protect communications that take place during the psychological first aid period provided through second victim programs, so that healthcare workers have a truly safe place in which to process and begin to cope with the impact of their involvement in adverse events. They add that support mechanisms should be culturally dependent, and take into account the immediate, intermediate, and long-term support needs of second victims.

Chapter 3 - Methods

A. Aim of Study

The aim of this study is to examine the impact of involvement in an adverse event that caused harm to a patient – whether that adverse event was caused by a primary physician or another caregiver – on the GP's clinical behavior.

B. Hypotheses

Theoretical hypothesis:

A difference will be found between General Practitioners' clinical/professional behavior before and after involvement in an adverse event. After involvement in an adverse event, physicians will have a greater tendency to practice defensive medicine or avoidance behavior which may be expressed through "assurance behavior."

C. Operational Hypotheses

Assurance behavior

Since the ability to measure the duration of the medical encounter is subject to technological feasibility that is not at my disposal, I was unable to include a further hypothesis that following an adverse event the medical encounter would be of longer duration. However, I was able to test the validity of the following:

1. Frequency of referrals to the Emergency Room (ER) will be greater after doctors' involvement in adverse events that caused harm to a patient.
2. Documentation of the medical encounter (BIT) following physicians' involvement in an adverse event will be more elaborate among doctors who caused harm to a patient.
3. Frequency of referrals for laboratory tests will be greater following involvement in an adverse event, among doctors who caused harm to a patient.

Avoidance behavior

4. Scope of doctors' visits at the clinic will be narrower following involvement in an adverse event, among doctors who caused harm to a patient.

   In addition, I examine whether specific demographic factors such as age, gender, years of practice, and place of birth are associated with different modes of avoidance behavior.

The methods incorporated in this study are twofold:

1) The study was conducted in the context of a large ambulatory healthcare service and the hypotheses were tested according to the positivistic quantitative paradigm.

2) After the hypotheses were tested, and some confirmed while others not, an "action research" qualitative constructionist paradigm was adopted to provide contextual meaning to the findings and determine recommendations for supporting physicians following involvement in adverse events.

D. Action Research

Reason and Bradbury (2006) describe action research as follows:

> "*Action research is [a] participatory, democratic process concerned with developing practical knowledge in the pursuit of worthwhile human purposes, grounded in a participatory worldview which we believe is emerging in this historical moment. It seeks to bring together action and reflection, theory and practice, in participation with others, in the pursuit of practical solutions to issues of pressing concern to people, and more generally the flourishing of individual persons and communities…"*

Action researchers plan their research much in the same way as qualitative researchers do, when dealing with engaged and longitudinal field research.

They utilize several methods which include: Interviews, focus groups, and data collection through social networks.

One of the main differences between action research and other qualitative research paradigms is the fact that in action research the differentiation between the researcher and his object is often blurred in the course of long-term cooperation. Action research is mostly exemplified as a working "with" rather than working "on." Research subjects become, over the course of time, research partners (Reason & Bradbury, 2006).

Shein (2006) claims that some of the best opportunities for research are in situations that were not created by the researcher. In his opinion, data collection, structuring a concept, and developing theories are the result of a research attitude that embodies the desire to clarify events and communicate these clarifications to other researchers. Shein states that the best opportunities for research are present in situations structured by others who need assistance, and not in those created by the researcher.

E. Population and Study Sample

The participants in the study include 156 General Practitioners, working at the Maccabi Health Fund who reported to the Risk Management Department about adverse events during the years 2011-2012. The subjects were divided into three groups: The first group (whose participants caused the harm) includes 41 subjects (26.3%). An additional 54 subjects (34.6%) comprise the second group (whose participants did not cause the harm), and the third, control group (whose participants were not involved in an adverse event), consists of 61 subjects (39.1%). The entire sample comprises doctors who completed their specialization in family or internal medicine and General Practitioners who completed medical school without a specialization.

The General Practitioners who participated in the study are either self-employed or employees of the Maccabi Healthcare Fund. I chose to focus on GPs for two reasons: Because they number the largest group at the health fund, which allowed for expansion of the sample; and because the population of GPs is more homogeneous compared to other groups of doctors.

The subjects were selected through the Risk Management system documentation of the adverse events reported during 2011-2012. The study includes monthly data collected six months before the event, extending to six months following the event. Finally, the basis of comparison was determined at two months prior to the event and a month after, in view of the fact that apparently the impact of an adverse event on the behavior variables is strongest during the first month following involvement in an adverse event.

F. Producing the Adverse Event Report and Constructing the Study Groups

An initial report was prepared using the Risk Management Department database to create the study groups.

The study includes adverse event reports from General Practitioners who informed the Risk Management Department about an adverse event that resulted in harm to a patient. Doctors also sampled random primes, from a list of doctors who were not involved in an adverse event during the same period of time.

To ensure that only relevant reports were included, all cases were examined in light of the following questions: Was harm caused to the patient? And was it the physician's fault? If the answers to these two questions were "no," the case was not included in the study.

The physicians were divided into three groups:

1. General Practitioners who were involved in an adverse event that resulted in harm to a patient (*N* = 41).

This group includes the GPs who were involved in an event that caused harm to a patient where it was they who caused the harm. One example is a GP who reported her instruction to give a child a flu vaccination at a dosage intended for an adult. This group also includes GPs who reported events they were responsible for that resulted in mild or severe harm to a patient and had a meaningful impact on the GP (Waterman et al., 2007).

2. General Practitioners who did not cause the harm themselves, but whose patients were involved in an adverse event that resulted in those patients suffering harm (*N* = 54).

The second group includes GPs who were involved in an adverse event which resulted in light to severe harm yet, unlike in the first group, it was not they who caused the harm. For example, a doctor wrote a patient a prescription for antibiotics and at the pharmacy the pharmacist gave him a different medication to which he was allergic. The patient developed a severe allergic reaction following which he was hospitalized due to the seriousness of his condition.

3. General Practitioners who were not involved in an adverse event (*N* = 61).

The GPs in this group were not involved in an adverse event, and since this group numbers more subjects than was required, every second examinee was chosen randomly.

The distribution of the subjects according to gender and country of origin is presented in Table 1. This table also presents the results of the χ^2 analyses for comparison between the groups based on these personal characteristics.

Table 1.

Distribution (N, %) of Subjects According to Gender and Country of Origin

		Groups						
		Caused harm***		Harm**		No event*		
Characteristics	Values	*N*	%	*N*	%	*N*	%	χ^2
Gender	Men	21	51.2	33	61.1	22	36.1	2.48
	Women	20	48.8	21	38.9	39	63.9	
Country of Origin	Israel	19	46.3	23	42.6	32	52.5	1.15
	Abroad	22	53.7	31	57.4	29	47.5	

*No event – the group of GPs who were not involved in an adverse event

**Harm – the group of GPs who were involved in an adverse event, but were not responsible for the harm caused

***Caused harm – the group of GPs who were involved in an adverse event and were responsible for the harm caused

This table shows that in the χ^2 no significant difference was found among the three groups indicated above in the gender distribution, $\chi^2 = 2.48$, $p > .052$, or in the country of origin's distribution, $\chi^2 = 1.15$, $p > .05$.

There were 80 women and 76 men in the study. Almost half the subjects, 74 GPs (47.4%), were born in Israel while the remaining 82 (52.6%) were not.

The ages of the study subjects range from ,1.5-67.3 $M = 49.21$, $SD = 9.77$ and seniority ranges from 1-33.2 years, $M = 13.53$, $SD = 7.08$.

An examination of the differences between the groups regarding seniority and age did not reveal a significant difference between the groups regarding seniority $F(1, 153) = 1.49$, $p > .05$. However, significant differences were found regarding age, $F(2,153) = 4.39$, $p < .05$, $Eta^2 = .05$.

The Bonferroni analysis to examine the source of the differences among the three groups shows that with respect to the subjects in the primary group (whose members caused harm to a patient) $M = 50.68$, $SD = 8.89$ and with respect to the second group of subjects, whose patients were harmed but not by them, $M = 51.28$, $SD = 9.27$ were older than the subjects in the control group (whose members were not involved in an adverse event) $M = 46.40$, $SD = 10.22$

G. Study Tools

Before describing the research groups I describe the reporting process and the manner in which adverse events are handled by the Risk Management Department at the Maccabi Healthcare Fund.

The doctor reports to the Risk Management Department close to the time when the adverse event occurs and describes the chain of events. The Risk Management Department provides initial support, focusing on the emotional difficulty the doctor is experiencing as a result of involvement in the adverse event. Upon obtaining responses to a standard set of questions, the doctor is provided with instructions as to how to behave in the short run and in an intermediate period, to decrease risks for both the doctor and the patient. The department classifies the initial report according to two sets of criteria: The

Risk Management dimension of the event (based on the potential risks inherent in the event) and harm caused to the patient during the event. Harm is characterized at three levels: A contains two groups = A1 – no damage and A2 – minute damage. B = medium damage, and C = severe, irreversible damage, or death.

Based on the initial classification, the Risk Management Department studies the event and provides the doctor and the organization with feedback and insights so as to determine what is to be done and minimize exposure to similar risks in the future.

When an adverse event occurs, doctors are supposed to report the event to the Risk Management Department as soon as possible. Sometimes the "event" was actually an ongoing situation, as in the following example: An oncologist reported that he did not notice the recurring results of blood tests for cancer markers and as a result did not treat an oncology patient in time when her cancer returned. Data was collected to determine the level of harm caused to the patient, whether the harm was caused by the reporting doctor, or whether the reporting doctor was involved in the event, but a different care provider was responsible for the harm caused.

The data was categorized based on the information in the system that was gathered through reports received.

In this study, I utilized three sources of information: Patients' medical records, doctors' files from the Human Resources Department, and records retrieved from the Risk Management database describing adverse events that occurred during the years 2011-2012.

* The medical records include descriptions of patient's complaints, physical examinations, and the medical recommendations at each encounter with the doctor.

* The administrative records include the files about the doctors from the HR Department.

* The Risk Management records include all documentation about adverse events, including the event report and recommendations as to how to handle the event.

I chose four measures from the patients' medical records to serve as dependent variables in the study. Based on these four measures I was able to compare doctors' behavior before and after the adverse event occurred and to analyze doctors' professional behavior.

H. Variables Related to Defensive Behavior

a. Frequency of referrals to the Emergency Room (ER); the percentage of referrals to the ER of the total visits to the doctor

b. Frequency of referrals for laboratory tests; the percentage of referrals for laboratory tests of the total visits to the doctor

c. Number of BITs in the documentation of the medical encounter following a physician's involvement in an adverse event; the mean of bits written in a given month for the number of visits to the doctor

d. Scope of doctors' medical activity, measured by the number of visits

In view of the fact that it was technically too difficult to measure the duration of the visit, this variable was not measured in the study as initially planned.

Risk Management System: The Risk Management System enables the Risk Management Department to document adverse events based on physicians' reports, and to respond with feedback.

Administrative Records: The administrative records include the administrative data that pertains to the doctors such as age, seniority in the profession, and seniority within the Maccabi Healthcare Fund, information about the clinic(s) where the doctor works and the opening hours, the doctor's qualifications, courses taken, contact information, etc. These records were used to collect relevant demographic data about the subjects in the three groups, such as gender, age, professional seniority, and country of origin.

I. I. Study Procedure

Once decisions were made as to which groups of subjects would be participating in the study and which measures would be used, an application was made to Tilburg University and to the management of the Maccabi Healthcare Fund to obtain confirmation from the internal study committees.

Next, as is customary, a request was submitted to the Helsinki Committee. Confirmation was received from the Helsinki Committee, and the committee also allowed that patients not be required to sign an informed consent form.

The data was collected during the course of 2013 through examination of all the records (as described in the Study Tools section on page 54) of activity during the two-month period prior to, and the one-month period following, an adverse event on the part of the care providers involved in an event who caused harm to a patient, and of care providers who were not involved in an adverse event. The time frame was chosen since even during the initial observation of the data it seemed likely that behavioral change would occur in closer proximity to the adverse event.

I selected the doctors for Groups 1 and 2 after studying the reports submitted to the Risk Management Department during 2011-2012. The doctors in Group 3, who were not involved in an adverse event, were chosen in a semi-random manner as control was applied to the variables of age, gender, professional seniority, and country of origin. These variables were relevant for the study in order to maintain homogeneous groups.

Once subjects had been identified for each of the three groups, data was extracted from the administrative records concerning the personal and demographic characteristics of the doctors, and from patients' medical records about the extent of the documentation in the file, the number of referrals for laboratory tests, the number of referrals to the ER and the number of visits to the doctor.

Chapter 4 - Results[3]

My hypotheses refer to the differences between the three study groups: The doctors who during the adverse event caused harm to a patient (DO HARM), the group of subjects who did not cause the harm to the patient (HARM) and the control group – doctors who were not involved in an adverse event.

The dependent variables which were examined include the number of BITs in the medical report of the visit, which reflects the length of the entry or documentation in the file; the number of laboratory tests patients were sent for; the number of referrals to the ER for the patients; and the number of medical appointments with the doctor. The one-way ANOVA was used for each of the measures chosen, to examine the differences in the measurements between the groups prior to involvement in the adverse event.

Since significant differences were found in the BIT measure (see page 62) and the visits measure (see page 65) prior to the event, the one-way ANOVA was employed and the dependent variables were measured "before" and "after" the event. The covariates were the initial measuring. This analysis facilitates consideration of the preliminary differences between the groups during the first measuring. In order to achieve uniform analyses, each of the four measures was analyzed in this way.

The findings identified through the analyses follow:

A. Differences between Groups with Respect to Referrals to the ER

One of the variables examined in this study was the number of referrals of patients to the ER made by a GP following involvement in an adverse event. This was calculated as the percentage of ER referrals from the total number of visits to the doctor during the one-month period following involvement in the event.

[3] A summary table of the results is presented in the Appendix to Page 104

My first hypothesis relates to the differences found prior to and following involvement in an adverse event. According to this hypothesis, the doctor involved in the "Do Harm" group will register more referrals to the ER following his involvement in an adverse event than before the adverse event occurred.

In the variance analysis between the groups prior to the involvement in the adverse event, no significant difference was found between the groups, $F(2,127) = 1.22$, $p > .05$. To examine the changes that occurred either before or after involvement in the adverse event, a one-way Anova was conducted. In that analysis significant differences were found between the three groups, $F(2,123) = 3.90$, $p < .05$, $Eta^2 = .06$.

Table 2 presents the means and the standard deviation, and Figure 1 displays the changes that occurred in the various groups.

Table 2.
Means and Standard Deviation in Referrals to the ER before and after an Adverse Event

	GROUPS					
	Caused Harm		Harm		No Event	
	M	*SD*	*M*	*SD*	*M*	*SD*
before	3.05	1.98	3.82	3.30	3.87	2.63
after	3.52	3.34	3.77	4.80	3.42	1.95

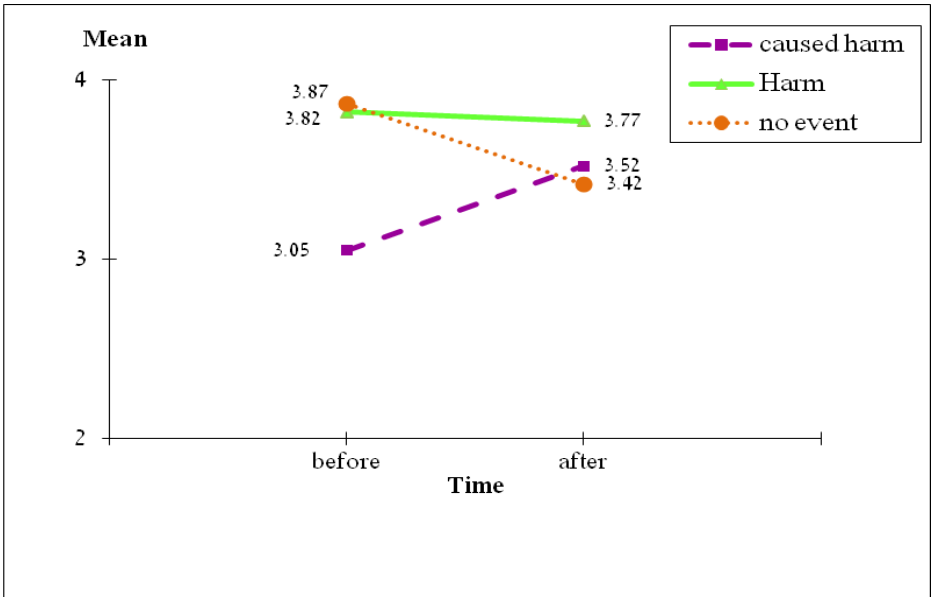


Figure 1. The Mean of Referrals to the ER before and after the Adverse Event

As illustrated in the chart, in the group where the harm was caused by the patient's GP, the percentage of referrals to the ER increased, while in the other two groups the percentage of referrals to the ER decreased.

In the Simple Effects analyses to examine the source of the differences between the groups, significant differences were found regarding the doctors who caused harm, $F(1,124) = 4.33$, $p < .05$, $Eta^2 = .03$.

However, no significant difference was found among the subjects of the second group (Harm), $F(1,124) = .03$, $p > .05$, or in the control group $F(1,124) = 2.78$, $p > .05$. These findings are consistent with the hypothesis according to which the doctors who caused harm were more inclined to send more patients to the ER following their involvement in an adverse event.

B. Differences between Groups Regarding the Length of the Entry (BITs) in the Medical File at Subsequent Medical Encounters

My second hypothesis relates to the differences between the groups with respect to the length of the entries in the patient's file prior to and following involvement in an adverse event. I hypothesized that documentation of the medical encounter (BIT) would be more elaborate following a physician's involvement in an adverse event.

A unidirectional variance analysis was used to examine whether there were differences between the three groups in terms of the number of BITs (which reflect the length of the entry) registered during a medical interaction before and after involvement in an adverse event.

That analysis reveals significant differences between the three groups in the study, $F(2,150) = 4.68$, $p < .05$, $Eta^2 = .06$, and in the comparison analyses of couples according to Bonferroni, significant differences were found between the group of doctors who caused harm, $M = 175.10$, $SD = 122.03$ and the second group of doctors who were involved but did not cause any harm, $M = 207.22$, $SD = 149.56$ and the control group which was not involved, $M = 269.63$, $SD = 183.6$.

Due to these preliminary differences we used the Anova which partialled out these differences. The Anova did not find a significant difference between the groups in the changes that took place $F(2, 148) = 2.05$, $p > .05$, as may be seen in Table 3 and Figure 2.

Table 3.

Means and Standard Deviation of Length of Entry in Medical File before and after the Adverse Event, among the Three Study Groups

	Groups					
	Caused Harm		Harm		No Event	
	M	*SD*	*M*	*SD*	*M*	*SD*
before	175.10	122.03	210.68	148.79	269.63	183.62
after	176.00	124.19	213.43	157.85	256.92	169.61

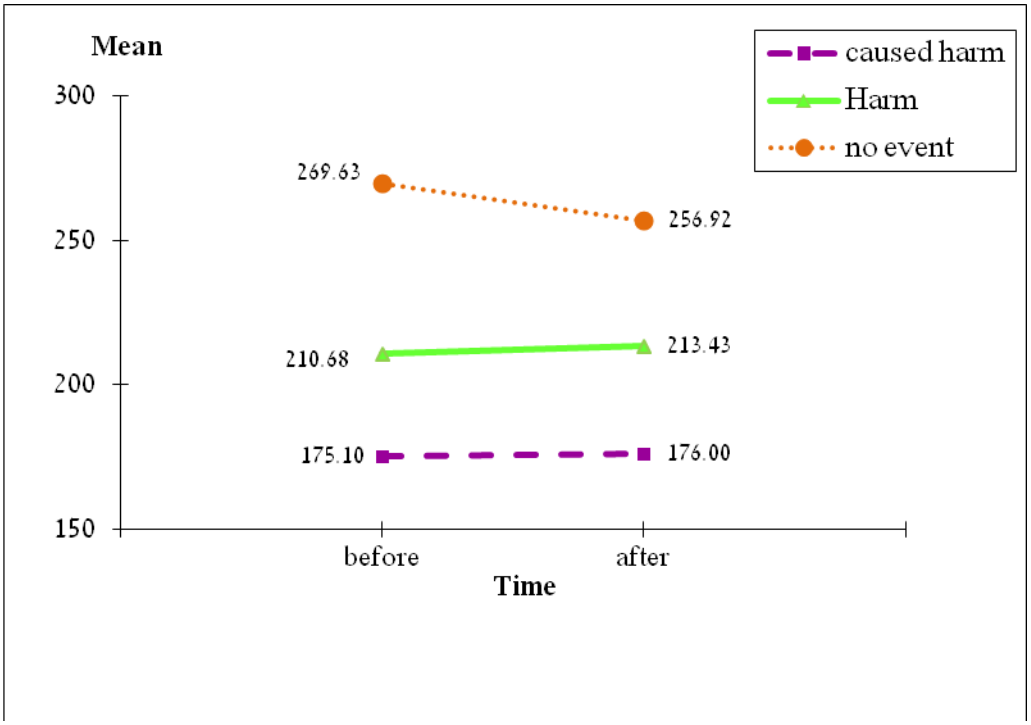


Figure 2. The Mean of the Length of the Entry in the Medical File before and after the Adverse Event

These findings are not consistent with the study hypothesis according to which the documentation of the medical encounter (BIT) would be more elaborate following a physician's involvement in an adverse event.

C. Differences with Respect to the Number of Referrals for Laboratory Tests Following Involvement in an Adverse Event

Additional variables focused on the number of referrals for laboratory tests. The percentage of the referrals was based on the medical records examined in all the medical visits included in the study. No significant difference was found during the preliminary variance analysis, $F(2,138) = 1.89$, $p > .05$. In the Anova comparison of changes that occurred prior to and following the event, no significant difference was found between the three groups, $F(2,135) = .65$, $p > .05$.

Table 4.

Means and Standard Deviation Regarding the Number of Referrals for Laboratory Tests before and after the Adverse Event, among the Three Study Groups

	Groups					
	Caused Harm		Harm		No Event	
	M	*SD*	*M*	*SD*	*M*	*SD*
before	2.99	1.41	2.72	.87	3.18	1.30
after	2.97	1.23	2.64	.93	3.09	1.02

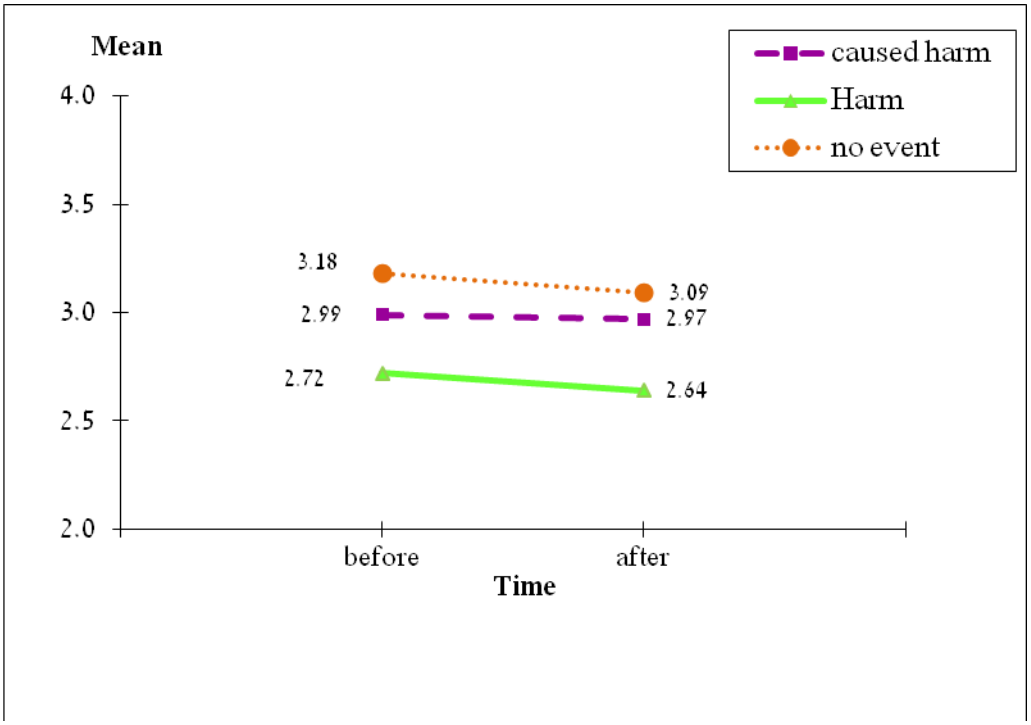


Figure 3. Mean of Referrals for Laboratory Tests before and after the Adverse Event

These findings are not consistent with the hypothesis which posited that the frequency of referrals for laboratory tests would be greater following involvement in an adverse event.

D. Differences between Groups Regarding the Number of Doctors Visits Following Involvement in an Adverse Event

As mentioned, the fourth variable that was examined was the number of visits doctors had with patients following involvement in an adverse event. According to the hypothesis, subjects who caused harm would reduce the number of encounters with their patients relative to the other groups.

The hypothesis refers to the difference in the number of visits between the study groups; namely, the medical encounters that doctors had with patients prior to and following their involvement in an adverse event. In the variance analysis between the three groups held two months prior to the adverse

event, during the initial measuring a significant difference was found between the groups, $F(2,153) = 3.91$, $p < .05$, $Eta^2 = 05$. In the Bonferroni analysis significant differences were found between the group of doctors who were not involved in the adverse event, $M = 607.42$, $SD = 418.69$, the group of doctors who caused harm, $M = 810.04$, $SD = 477.76$, and the group that did not cause harm, $M = 820.24$, $SD = 474.69$.

A one-way Anova was conducted, that took into account the initial differences between the three groups. This analysis revealed significant differences between the three groups regarding the changes in the number of visits before and after the adverse event, $F(2,152) = 4.24$, $p < .05$, $Eta^2 = .05$.

Table 5.

Means and Standard Deviation for the Number of Doctors Visits Following Involvement in an Adverse Event

	Groups					
	Caused Harm		Harm		No Event	
	M	*SD*	*M*	*SD*	*M*	*SD*
before	810.04	477.76	820.24	474.70	607.42	418.70
after	755.99	431.67	822.57	496.41	647.52	446.35

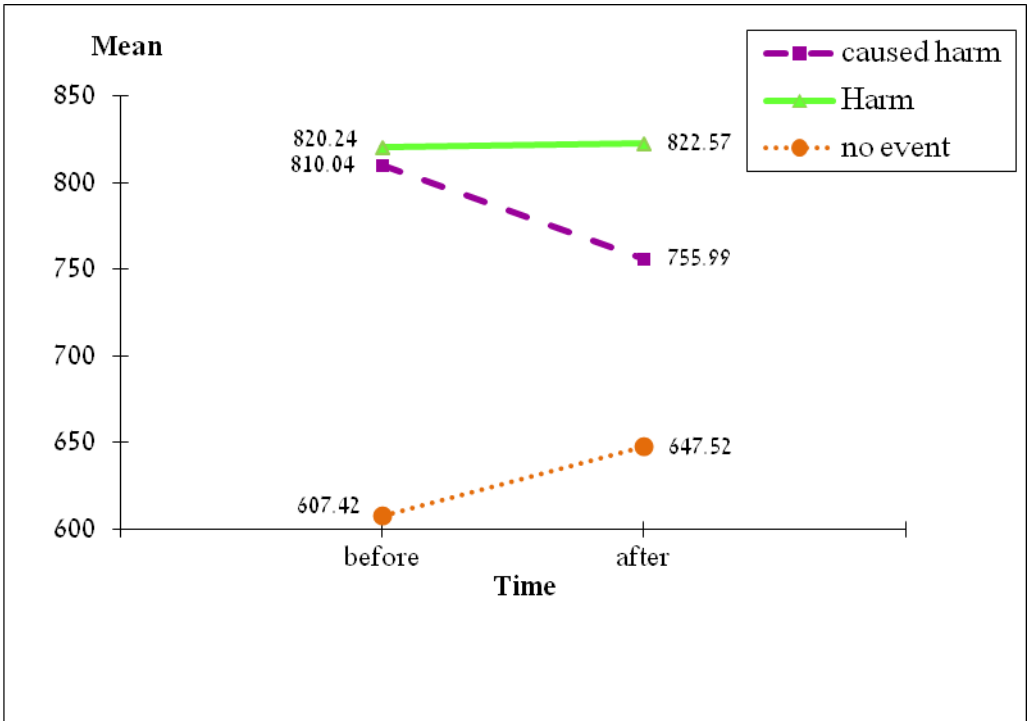


Figure 4. Mean of Number of Visits before and after the Adverse Event

This chart shows that while among the group of doctors who caused harm to a patient there is a relatively large reduction in the number of visits following involvement in an adverse event, in the control group (doctors who were not involved in an adverse event) there is some increase, and in the group of subjects who did not cause harm to their patients the change was minute.

To examine whether these changes are significant, a Simple Effect analysis was held to compare the numbers of visits "before" and "after" in each group. Significant differences were found in the "before" and "after" categories among the group of subjects who caused harm to a patient, $F(1, 53)= 5.62$, $p < .05$, $Eta^2 = .04$, as well as in the control group, $F(1, 153) = 4.60$, $p < .05$, $Eta^2 = .03$, but not in the group of subjects in which the harm was not caused by the patient's GP, $F(1,53) = .01$, $p > .05$.

As mentioned, in the group of subjects who caused harm to their patients during the adverse event, there was a decline in the number of visits following the event, while among the control group the number of visits increased.

These findings are consistent with the hypothesis that there would be a decline in the number of visits following involvement in an adverse event.

E. Additional Findings

In the analysis for the examination of the difference between women and men regarding the number of BITs registered before the event, significant, difference was found between women and men, $F(1,149) = 12.14$, $p < .001$, $Eta^2 = .10$.

However, no difference was found between women and men before and after involvement in an adverse event regarding the change that occurred $M = 292.50$, $SD = 265.49$, while the number of words written by the female General Practitioners was greater than that of the male General Practitioners, $M = 173.79$, $SD = 132$.

In the analysis to examine the difference between women and men regarding the number of referrals for laboratory tests following involvement in an adverse event that resulted in harm to a patient, findings were, $F(1, 133) = 6.48$, $p < .05$, $Eta^2 = .05$. Female doctors requested more tests than male doctors did, $M = 3.15$, $SD = 1.11$. Male doctors, $M = 2.67$, $SD = 1.05$.

Another noteworthy difference is that there are fewer visits to the doctor following an adverse event, $F(1,149) = 3.99$, $p < .05$, $Eta^2 = .03$.
Among male doctors the number of visits is, $M = 842.99$, $SD = 554.11$, which is higher than among female doctors, $M = 690.54$, $SD = 394.58$.

Chapter 5 - Discussion

A. General

This study addresses the issue of the impact on the professional behavior of General Practitioners in the community caused by their involvement in an adverse event during which harm was caused to the patient, with the goal of examining the impact of the involvement on those directly responsible as compared to those whose patients were harmed by a different GP.

In this study an "adverse medical event" is defined as a development, action or result that occurs in the process of medical treatment and is either undesirable or unplanned, and either results in physical or mental harm or could have resulted in such harm (Wilf-Miron & Levinhoff, 2001). It should be emphasized that in an adverse event the harm referred to is caused by medical conduct and is not the result of a patient's illness (Powell, 2006).

B. Impact of Involvement in Adverse Event on Physicians' Clinical Behavior

The professional literature defines deficiencies in functioning at work as a disorder in performance ability which stems from various factors and is expressed through a decline in clinical capability (Sherman & Thelen, 1998).

Defensive medicine is a case in point. It is defined as diagnostic or therapeutic actions that are not undertaken to ensure the health of the patient, but rather to protect the doctor from any possible litigation (Anderson, 1999). Defensive medicine is expressed through avoidance behavior and decreased confidence (Studdert et al., 2005). Decreased confidence refers to an increase in requests for tests (some of which are unnecessary) to ensure that the physician is "covered" should he or she be sued. Such behavior could deter patients from submitting a malpractice claim. The present study examines GPs' professional functioning following involvement in an adverse event according to four dimensions of professional behavior, as detailed below.

An analysis of these four variables reflects the behavior of the doctors prior to and following an adverse event that caused harm to a patient (in two of the study groups) or sheds light on daily conduct (in the control group).

Included is the percentage of referrals to the ER; the mean amount of BITs written; the percentage of referrals for laboratory tests; and the average number of visits with patients.

Unlike most of the studies that employ self-report questionnaires – especially among care providers at hospitals – the present study tests its hypotheses through behavioral measures for the community GPs who were involved in an adverse event. The variables chosen are those that, according to the literature, demonstrate professional behavior and can be extracted from the computer system to confirm or rule out defensive and/or avoidance behavior on the part of a GP following involvement in an adverse event.

The four variables are indications of the doctors' behavior before and after the adverse event and the findings of the studies published to date show that there is an impact on the level of professional functioning of care providers following involvement in an adverse event.

The basic assumptions of the study, based on the findings in the literature as cited in Chapter 1, are that involvement in an adverse event influences the clinical behavior of physicians who tend to assume:

- Defensive behavior aimed to minimize physician exposure to the risk of being involved in another adverse event and its negative outcomes.
- Avoidance behavior aimed to distance the physician from the clinic environment that may pose a threat to the physician's self-confidence and wellbeing.

Based on this assumption, four operational hypotheses were defined:

- Frequency of referrals to the emergency room (ER) will be greater following doctors' involvement in adverse events that resulted in harm to a patient.
- Documentation of the medical encounter (BIT) with the patient will be more elaborate among doctors who caused harm to a patient.

- The number of referrals for laboratory tests will be greater among doctors who caused a patient harm.
- The scope of medical actions (visits) performed by a physician will be narrower among doctors who caused harm to a patient.

The hypotheses examined in the present study relate to the differences among the three groups: doctors who caused harm to their own patient during an adverse event; doctors whose patients were harmed by another medical professional; and the control group – doctors who were not involved in an adverse event. The dependent variables that were examined include: the number of BITs in the medical report of the visit, which reflects the length of the documentation; the number of laboratory tests for which patients were sent; the number of referrals to the ER recorded for patients; and the number of medical encounters conducted by the doctor, before and after involvement in an adverse event.

The present study is based on medical records, an adverse event data base covering the period 2011-2012; and personal data about the physicians. The medical records include specification of the patient's complaint, a description of any physical examination, and the medical recommendations provided at each visit. The administrative records include information about the doctors' personal characteristics and data from the Risk Management system which documents adverse events and includes all the information about the event, including the initial report and subsequent recommendations for the handling of the event; and the patient's medical file (managed by the doctor).

The hypotheses in the study were based on the professional literature pertaining to this issue, reports of care providers who were involved in adverse events, and the professional experience of the author. Based on these sources it was assumed that involvement in an adverse event affects the doctors involved in various ways and may have an adverse impact on the quality or safety of their clinical practice.

It was found that the doctors may suffer from symptoms of trauma and feelings of guilt, which can undermine their personal confidence, particularly

within the context of their work (Scott et al., 2010). Sleep problems and concentration difficulties were evident among doctors who responded with high anxiety following involvement in an adverse event. Some become overcautious and avoid certain actions so as to protect themselves from possible malpractice claims in the future, and some even choose early retirement (Charles et al., 1987). The inability to view commission of an error as normal and legitimate human behavior for doctors makes it difficult for them to admit or acknowledge their own errors. Therefore, doctors find ways to defend themselves, and their reactions to involvement in an adverse event may be expressed as anger, guilt, defensiveness, accusations, and lashing out at patients or other staff members. This emotional distress may be destructive for some doctors and cause over-stress, and use of alcohol and drugs (Delbanco & Bell, 2007), or lead to excessive caution and a tendency to be hesitant, which may increase the risk of making additional medical errors and may significantly impair their ability to function (Charles et al., 1987).

One of the most powerful expressions of impaired performance is "defensive medicine," which is the practice of employing diagnostic or therapeutic measures that are not aimed at ensuring the patient's health, but rather at protecting the physician from possible malpractice claims (Anderson, 1999). The fear of litigation is apparently the driver of defensive medicine. Defensive medicine is expressed in two main ways: assurance behavior and avoidance behavior. Of the four hypotheses referring to defensive medicine, three relate to assurance behavior and one to avoidance behavior.

In the following discussion an attempt will be made to elaborate upon and explain the findings that were presented in the results chapter.

C. Limitations of Study and Suggestions for Future Studies

The singularity of this field study lies in its research method, which examines the doctor's professional behavior "in reality," by examining his or her actions following involvement in an adverse event. The advantage of this approach is that it measures behavioral changes, which are considered to be the highest level of change following changes in attitude. At the same time, this approach necessitates execution of a field study which makes it difficult to separate the

research variables and others that are likely to influence the study, such as policy changes in the organization, or changes in the economy, an example of which might be a reduction in the resources dedicated to health.

Another limitation of my approach relates to the number of subjects in each group. This limitation was the inevitable outcome of the number of adverse event reports that were submitted to the RM Department. The decision to evaluate a longer period of time and a larger group of subjects would have necessitated control over a larger number of systemic organizational changes such as the introduction of new procedures into health policies, etc. In addition, it would have caused a time gap from the date of the event, which might have blurred the results.

Another limitation which might have affected the entire study concerns the nature of the sample per se. This sample was in many ways homogeneous. For example, it includes subjects who work for the same health fund and all of whom are General Practitioners. Therefore, it is possible to question the generalized findings for the entire population.

The tools utilized in the study may be counted among its limitations. The study tools are affected by the existing data in the Maccabi IT systems. Since the issue does not concern physical variables, the measurements are not wholly accurate and are based on specific paradigms. Accordingly, it may be assumed that if the study variables were measured differently, such as by self-report, different results might have emerged. Behavior measures may be affected by a wide variety of factors, including personal life events and organizational policy, which were not controlled in this study.

Due to the limitations of the study and its findings, and the need to expand and deepen knowledge about the subject, future studies should be encouraged. At the top of the list, and a direct outcome of this study, is the recommendation to focus in future on intervention programs designed to support doctors who were involved in an adverse event; to examine tools aimed to strengthen the immunity of those types of doctors and patients who are most likely to be involved in adverse events. We need additional, focused, study of the factors that influence the way one copes with an adverse event in

order to identify or determine a therapeutic model to respond to the specific needs of medical professionals involved in adverse events in general, and of particular care providers who are at risk.

There is also a need for rigorous examination and in-depth discussion about the type and diversity of administrative and interpersonal tools needed to support and best respond to medical staff involved in an adverse event. Due to the stressful nature of a physician's work and the inherent risk of medical error, it is vital that we conduct studies that examine whether doctors in various states of stress tend to choose emergency care. Such research is especially important since the safety ramifications in such cases are such that there is great potential for harm.

D. Reflections on Findings

Hypotheses Related to Assurance Behavior

One of the variables examined in this study was the number of referrals to the ER made by a doctor who was involved in an adverse event. This was calculated as the percentage of referrals to the ER from the total number of visits during a particular period.

The first hypothesis refers to the differences between the groups with respect to this variable by comparing the numbers prior to and following involvement in an adverse event.

According to this hypothesis, which was supported by the research findings, the involved doctor in the "caused harm" group would make more referrals to the ER following his involvement in an adverse event than he did before the event occurred. Differences were found between the group of subjects who caused harm to the patient and the other two groups. In the former, there was an increase in the percentage of referrals to the ER, while in the latter two groups there was a decline in the percentage of referrals to the ER.

The explanation may be that those who were involved in an adverse event which caused harm to a patient are unwilling to risk involvement in another

adverse event and experience again the ensuing criticism from managers, colleagues, patients, and their families.

Physicians who have been involved in an adverse event have been found to be at risk of involvement in additional such events. Referring patients to the ER may be viewed as a safety net by a physician who has received a blow to his or her professional confidence.

This type of behavior is a typical example of defensive medicine, where a doctor is guided by the desire to defend himself against potential future complaints or claims. The research finding supports the professional literature which shows that caregivers are very judgmental when it comes to doctors who have made clinical errors. Such errors are seen as major shortcomings and doctors involved in adverse events which caused harm to a patient often feel harshly judged and blamed (Raines, 2000; Waterman et al., 2007). Therefore, we assume that doctors will be more cautious following involvement in adverse events.

Kroll et al. (2008) explain that the negative response and lack of tolerance experienced by doctors involved in an adverse event may delay the process that enables them to learn from their mistakes. One reason for this is the emergence of the "accusation culture" coupled with a decline in self-confidence. Feelings of guilt can exacerbate defensive behavior which a doctor may choose in an attempt to avoid a similar experience. A referral to the ER transfers the responsibility for diagnosis and treatment to the ER doctors. In addition, due to impaired self-confidence, a doctor may be apprehensive about making and taking responsibility for decisions and prefer to rely on other doctors. A further reason may be related to a doctor's perception of the ER as a more professional address than his or her community-based practice, with greater authority to make decisions about diagnosis and treatment.

The second hypothesis is based on the assumption that a physician who was involved in an adverse event would exhibit defensive clinical behavior that would be manifested in a tendency to document encounters with patients in their medical files in a more detailed manner than other physicians would.

A priori differences were found between the groups, regarding the extent of documentation recorded in the medical file by the control group (GPs who were not involved in an adverse event), where more extensive documentation was found, as compared to other groups.

The medical documentation may reflect the quality of a doctor's practice, and poor or laconic medical documentation may pose a danger to patients. We may also assume that doctors who tend to not follow standard procedures, including recording all pertinent information in a patient's medical file, may be more likely to be involved in medical adverse events which cause harm to patients.

The medical file may serve as solid defense against a claim of malpractice. A detailed record of treatment reflects the steps in the decision-making process of the care provider and the interaction with the patient (Weed, 1969/2015). The significance of the medical records in cases of claims of malpractice or adverse events that resulted in harm to a patient is substantial for both the care provider and the patient. For this reason I assumed that the length and extent of documentation in a patient's file would be greater following a doctor's involvement in an adverse event that caused a patient harm.

At the same time, additional studies find no connection between involvement in an adverse event that caused harm to a patient and the performance of the doctor following such an event (Christensen, Levinson, & Dunn, 1992). In their study, Christensen, Levinson, and Dunn (1992) and also Mu and Lohman (2003), show that faulty performance is not necessarily the result of involvement in an adverse event. They explain that such involvement may even be beneficial, since it may provide the opportunity for a doctor to learn from mistakes and improve future performance.

A third variable in this study focuses on the number of referrals for laboratory tests. In this case, the hypothesis was not corroborated. Following an analysis, no significant differences were found among the three groups, so that these findings are not consistent with the hypothesis of the study according to which the number of referrals for laboratory tests would be greater following involvement in an adverse event.

The hypotheses of the present study emerged following an examination of the ideas of the researchers West et al. (2006), Kroll et al. (2008), and Raines (2000) and Waterman et al. (2007), who claim that a doctor's level of stress following involvement in an adverse medical event will be higher due to feelings of guilt, and that this, in turn, should change or increase the number of referrals for laboratory tests. However, the finding from the present study contradicts those expectations. West et al. (2006) and Tucker (2004) refer to a decline in performance quality caused by exhaustion among care providers and doctors involved in adverse medical events, which may partially explain the finding in the present study.

It is worthwhile to explore the difference between increased referrals to the ER – the hypothesis about which was corroborated – and increased referrals for laboratory tests, the hypothesis about which was *not* corroborated, assuming that both hypotheses express characteristics of assurance behaviour.

One explanation may be that for the doctor, a referral to the ER is a referral to a factor outside the clinic, to which it is possible to transfer responsibility for continuing clarification and decision-making. In addition, sometimes doctors perceive ER doctors as better skilled at providing treatment in more complex situations.

Contrarily, a referral for laboratory tests leaves the responsibility for the decision in the hands of the doctor at the clinic, and may demand ever more complicated decisions with respect to follow-up and diagnosis of the patient's situation, not to mention analysing additional data in the form of the test results. A further explanation may be connected to the fact that following involvement in an adverse event a doctor feels more anxiety and less confidence about treatment of patients. Perhaps under such conditions they tend to treat more cases as emergencies or urgent situations and therefore refer them to the ER.

Hypotheses Related to Avoidance Behavior

The fourth variable examined was the number of visits to the doctor. The hypothesis was that doctors who caused harm to their patients would reduce the number of encounters with patients, relative to other doctors. An examination of the differences between the groups – regarding the number of visits prior to and following a doctor's involvement in an adverse event – reveals a significant difference among the three groups. Among the group of doctors who caused harm to a patient, a relatively significant decline was found in the number of visits following involvement in an adverse event. As mentioned, these findings support the hypothesis according to which a decline in the number of visits would be found following involvement in an adverse event, so that in this respect the study hypothesis was corroborated. It may be argued that involvement in an adverse event which harms a patient decreases a doctor's motivation. Powell (2006) also refers to the decrease in a doctor's level of motivation following involvement in an adverse event, explaining that such involvement engenders feelings of dissatisfaction, lack of gratification, doubt, insecurity, and more. Therefore, it may be deduced that the decline in the number of patient visits stems from a decline in professional motivation, and perhaps is also a result of the negative emotions experienced by a doctor following involvement in an adverse event that caused harm to a patient.

A further possible reason for a decline in the number of visits may be a doctor's desire to avoid an additional adverse experience, thus the propensity to reduce the number of encounters that embody this potential. However, since the doctor is obliged to continue to earn a living, it seems that only a few actually absent themselves from work during the period proximate to the adverse event.

It is also possible that a doctor spends more time with each patient in an effort to ensure more thorough and accurate diagnosis and treatment following his involvement in an adverse event. Therefore, when counting the total number of visits there may be a decrease in number, but perhaps an increase in the quality and duration of those visits. While the doctor may see fewer patients, his anxiety about making another mistake may lead him to devote more time

to each one. Due to technical problems, it was not possible to measure the duration of the visits.

Denham (2007), Wu (2000), and Scott et al. (2009) provide yet another explanation for the decline in the quality of a doctor's performance following involvement in an adverse event that caused harm to a patient. As previously mentioned they refer to the "second victim" phenomenon and explain that such doctors and care providers may become second victims of the event, which often adversely impacts their careers. Angvik (1995) explains that the emotional outcomes may lead to a crisis that triggers a cyclic reaction which in turn intensifies the negative feelings and impairs a doctor's performance. They suggest that this may explain the relatively large decline in the number of doctors' visits following involvement in an adverse event. Additional evidence suggesting that the involvement in an adverse event negatively affects a doctor's performance was presented by Miller-Burke (1999) and Waterman et al. (2007).

Chapter 6 - From Mirroring to Making

A. Background

The main goal of this study was to examine the impact on the professional behavior of a community General Practitioner caused by involvement in an adverse event in which harm was caused to a patient.

As I explain at the start of this document, I chose my topic when my personal and professional experience led me to believe that such involvement affects the functioning and emotions of the doctors. In the professional literature I found support for my hypotheses in the retrospective questionnaires presented to doctors involved in such events. However, I identified an absence of empirical studies based on hard data that would indicate that this is indeed the state of affairs.

Since any change in medical processes necessitates a substantial investment of resources as well as conceptual and cultural shifts, it is important to prove the assumptions of the research. Further, as I am in charge of Risk Management and patient safety at a healthcare fund that approved this study, the results of the research must be meaningful, accurate, and applicable to the improvement of the processes that concern the Maccabi Healthcare Fund regarding the phenomenon of the involvement of care givers in an adverse medical event.

At this point I transition from the empirical to the qualitative, in an effort to define the type of intervention programs that would best respond to the needs of doctors who were involved in adverse events. The goal is to help them to return to optimum functioning in the most effective manner, while leveraging the negative experience as one that may contribute to their professional development.

Qualitative research is supported, among others, by Shkedi (2003). While Shkedi analyzes the positivistic approach and its impact on education systems, his findings may be applied to medicine as well. For example, Shkedi claims that defining "the average student" or "the average teacher" is

abstract and negatively affects a true understanding of the world of teachers and students. His premise is that once we are done with the "acrobatics of statistics" we are able to explain only a small percentage of the variance in the researched phenomena. For this reason, he supports the qualitative research method claiming that it raises many diverse questions and not just those that may be solved by applying a positivistic approach. Denzin and Lincoln (2000) also support these ideas.

Such an analysis of adverse events, based solely on data, or on a precise, empirical description of that which is seen on the surface, obviates the possibility of including personal meaning in the findings.

The qualitative research approach reached Israel many years after it was accepted as valid in the western world. The initial reason was the lack of sufficient material in Hebrew about this subject. More importantly, the transition to qualitative research requires a paradigm shift and a change in the perception of research in accordance with a post-positivistic approach. The goal of qualitative research is not to reveal reality, since it posits that there is no objective reality, but rather to examine and experience reality in order to comprehend its myriad implications. In qualitative research different research methods are employed and various sources are cross-referenced. This method allows researchers to understand the many facets of the events and their context as they examine them (Sabar Ben-Yehoshua, 2001).

According to the positivistic approach, reality is absolute and unrelated to time or context, which is why it may be described by using statistics and controlled elements. In such research, it is the role of the researcher to separate the components of reality, investigate them with objective tools and thus form an accumulated body of knowledge. This was my principle approach in the present study, while also referencing the pros and cons of field research.

However, in the constructivist paradigm, reality is a subjective structure based on the characteristics of the prevailing culture, of the subject, and of the researcher, and without these there is no research. That is to say, the meaning of reality is granted by the researcher through his or her

interpretation of the subject. Unlike the positivistic approach, constructivism claims that it is impossible to isolate variables, so that one should rather view reality as a holistic entity. I adhere to this approach in an attempt to determine the most appropriate interventions based on the findings of this research.

According to Denzin and Lincoln (2000) it may be assumed that if two risk managers investigate the same event, there is reasonable probability that they will reach different conclusions. Based on my experience investigating adverse events, when two groups of researchers are involved, even when the facts are identical, the background and composition of each research team have decisive impact and lead to different conclusions. My experience with different groups of students has shown that despite my attempts to provide them with objective tools and data, the influence of their subjective attitude to the event can still be discerned. This attitude stems from their background, professional culture, field of study, and their individual approach to the topic of human error, as well as the specific circumstances surrounding the event.

Tal and Lichtenfeld (2010) present a classic illustration of the preceding from an investigation of aviation accidents. Their example concerns an Israeli pilot who was famous for his talent and skill and also for his tendency to "overlook" the rules. During a drill, he crashed his jet and the almost immediate ruling was "pilot error." Tal – a researcher, who at the time was a member of the Air Force Risk Management investigation, requested permission from the commanders to examine all possible factors related to the pilot. He talked to the pilot's friends and commanders and examined every piece of information he could find that was related to him. His final report comprised 60 pages. It was clear to him that none of the commanders would take the time to read such a long report but he did not give up until he reached the highest echelons, finally presenting the report to the Commander in Chief of the Air Force. That commander read every page of the report and summoned Tal to a meeting. The commander described Tal's investigation as revolutionary, commenting that as with every revolution his approach should be introduced gradually. Subsequently, a gradual change did occur in the Air Force

regarding the investigation of serious cases, including the way conclusions are drawn and lessons learned.

Gergen (2014) argues that researchers observe phenomenon with the intention of illuminating, reporting about, or granting insights into given events or situations. In his article, he discusses how research should be conducted within the framework of social or behavioral science. Since my research concerns human behavior, Gergen's work provided me with new concepts and insights about my work. According to Gergen, there are assumptions which leave room for traditional research, which he refers to as reflective pragmatism.

With respect to clinical processes at the Maccabi Health Fund, we encounter the same problem described by Gergen (2014). One example is the clinical process that follows the creation of a medical image. Once the image has been processed, the findings are received by the GP. However, these findings are mostly technical, describing the size and texture and other characteristics of the focus of the image, while not including an interpretation of its clinical significance, or an opinion as to how to proceed as a result of the findings. The GP who receives the report is usually less of an expert than the doctor who analyzed the scan and wrote the report.

This state of affairs reflects a reality in which there is a separation between "researcher" and caregiver. The researcher's role is to describe the reality he perceives in an objective manner, while it is the role of the caregiver to draw the clinical implications. It is the GP who must make the connection to reality – to the patient and his or her symptoms. Undoubtedly, such separation is potentially dangerous for the patient, as we learn from the occurrence of adverse events.

Gergen (2014) also analyzes the limitations of the metaphor regarding mirroring in research and asks: if we metaphorically close our eyes, can we imagine the world to which we aspire? This kind of thinking positions the research values at the forefront. In this case the aim of the research will not be to enlighten "that which is" but rather to create "that which may happen."

Gergen explains that this theory echoes Aristotle's perception about the acquisition of knowledge through habit and routine; or as Socrates says: perception or knowledge is inherent in the practical actualization of the goal.

One of the most important of Gergen's (2014) arguments is that when the mirroring approach is used to draw conclusions about existing conditions its impact is very small. This is not only because the discussion among professionals is often inaccessible to those outside their circle, but because the professionals' true assumptions are extremely sensitive to criticism of their methodological basis. Traditional research is usually devoted to the substantiation of theoretical assumptions, when in fact there are no clear means to actualize abstract plans which are relevant for specific circumstances. For this reason Gergen supports the development of a type of research that may impact the future. Some researchers have adopted this approach, agreeing that "the best way to predict the future is to create it." Yet for this approach to succeed, researchers would have to collaborate with those outside the academy (or in the case of my study – outside the medical field) so that the desired transformation may occur.

The work of most traditional researchers does not reflect their ideology or the moral implications of their studies. However, if more researchers related to their work as to something that should contribute to creating the future, it would ultimately become impossible to ignore the discussion of these issues. Gergen (2014) points out that the Natural Sciences were seen to be significant by the public only after people became aware of their contribution to daily life. The dramatic impact of science in the 20th century was mainly in the areas of how to cure disease and how to utilize better energy sources. Science received wide acceptance thanks to results achieved through the use of scientific research in these two realms.

The preceding led me to the conclusion that it is impossible to relate to the phenomenon of involvement in severe or adverse medical events only on the basis of statistical data or visible facts in the field. In order to arrive at a comprehensive understanding of an event, a deep and far-reaching investigation of all related factors must be conducted. An examination and

investigation of the medical-professional background of a doctor or other caregiver is not sufficient.

The personal and psychological backgrounds of those involved must be taken into account as well as the context in which the event occurred, the pressures brought to bear on a doctor to convince him to choose one course of action over another, pressure from a patient's family, and so on. Only all of these, combined with an analysis of all parameters, as well as consideration of the question "What would have happened if…?" will comprise the most comprehensive report possible about the researched event. Only this type of approach may lead to practical research that can be implemented, as well as to the ability to draw conclusions for the future to help prevent repetition of similar cases.

A major responsibility of every Risk Management Program is the investigation of adverse events. If the investigation of an adverse event is based on a positivistic approach, the greatest amount of effort is invested in the reconstruction of what occurred and the attempt to describe it in the most precise and reliable way. Still, such an approach obviously does not change the reality which facilitated the adverse event. Therefore, it is necessary to imbue the findings of the investigation with meaningful conclusions that may lead to the formulation and implementation of actions that have the potential to change that reality, so as to reduce the probability of recurrence of similar adverse events. The investigative process reflects the "mirroring" which leads to "making."

B. Method

Interviews regarding the findings of this study were conducted with 11 physicians in order to extrapolate ideas that could be applied to the creation of an intervention program to provide treatment and support for physicians involved in adverse events.

The physicians interviewed are clinicians who work for the Maccabi Healthcare Fund. They include: Six General Practitioners, two pediatricians, two gynecologists, and one otolaryngologist

All the physicians interviewed had been involved in an adverse event and had reported the event to the Risk Management Department. Therefore, we may assume their responses to the questions posed at the interview were informed by their personal, professional, and administrative experience.

Further, all the physicians interviewed work with the Risk Management and Treatment Safety Department on a regular basis, in accordance with their areas of expertise. All interviewees were personally and professionally motivated to participate in the interview, and none displayed any reluctance.

Each interview lasted about 30 minutes, and commenced with a short description of my research findings and the goal of the interview.

While open in format, each interview focused on three main questions:

1. What, in your opinion, is the personal and professional impact on a physician caused by his or her involvement in an adverse event?

2. Based on your personal experience, what are the typical reactions of managers, colleagues, and patients toward a physician involved in an adverse event?

3. In your opinion, how can the Maccabi Health Fund assist physicians who were involved in an adverse event?

The interviews were documented and later subjected to a content analysis in order to identify general statements relating to each question.

C. Results

Results are based on a content analysis of responses to interview questions.

Question 1

What, in your opinion, is the personal and professional impact on a physician caused by his or her involvement in an adverse event?

The following chart shows that there are a host of personal impacts affecting a physician involved in an adverse event, with the most frequently-reported including: loss of personal confidence, feelings of guilt, stress, and frustration.

It should be noted that similar impacts were illustrated in studies cited in the background chapter of this thesis.

Findings from numerous studies indicate that clinicians involved in medical errors and adverse events suffer from a host of emotional problems that deserve serious attention (Wu, 2000). Symptoms of second victims include feelings of guilt, anger, fear, inadequacy, and loss of personal and professional self-confidence (Mayo & Duncan, 2004 in Jones & Treiber, 2012). Doubts about clinical competence and the ability to continue to work as a health care provider were also identified (Edrees et al., 2011).

Physicians have reported feelings of surprise, helplessness, fear, and depression, as well as poor concentration and impaired memory, disturbing thoughts, sleep disturbances, somatic symptoms, and social avoidance (Edrees et al., 2011).

Question 1: **Personal Impact on a Physician Involved in an Adverse Event**

Statement	**N**
Loss of Confidence	9
Guilt Feelings	6
Stress	6
Frustration	5
Surprise	4
Difficulty to Admit the Error	4
Shame	4
Misc.	3
Anger	2
Total	**43**

The following chart introduces the professional impacts caused by involvement in an adverse event. Interview subjects mainly reported adopting defensive medicine behavior patterns; reducing the volume of their professional activities; seeking someone to blame; and fear of the reaction of colleagues and the organization.

These references corroborate the present research findings with regard to adopting the practice of defensive medicine, as specified in the results in Chapter 3; to an increase in the number of referrals to the ER; and to a

decrease in the volume of professional activities. One can detect a qualitative validation of the findings of the present empiric study in the responses of the physicians who were interviewed.

Question 1**: Professional Impact on a Physician Involved in an Adverse Event**

Statement	**N**
Adopting Defensive Medicine Behavior Patterns	9
Decreasing the Volume of Professional Activities	6
Seeking Someone to Blame	5
Fear of the Reaction of Colleagues and the Organization	4
Loss of Professional Confidence	3
Increase in Situational Awareness	3
Admitting the Error and Learning Lessons	2
Total	**32**

Question 2

What are the typical reactions of managers, colleagues, and patients to a physician who was involved in an adverse event?

This study does not evaluate the reactions of colleagues, the organization where a GP works, or patients toward a physician's involvement in an adverse event. Rather, physicians were asked what they imagine the reactions of their managers, colleagues, and patients would be, to enable us to learn about the current professional and clinical attitudes through their perceptions.

As shown in the following charts, about half of the physicians assume that they can count on their managers' support, while the other half expects to be charged and punished.

With respect to the anticipated response from colleagues, two thirds of respondents anticipated that colleagues would be shocked, while one third anticipated a supportive reaction.

Schwappach and Boluarte (2008) find that physicians involved in an adverse event rate highly the positive support from managers and colleagues.

One third of physicians involved in an adverse event anticipate that patients will support them, one third believe that patients will demonstrate a loss of trust, and a further third imagine that patients will react with anger and blame.

	Managers	Colleagues	Patients
Blame and Punishment	5	-	4
Support	6	4	4
Shock that an Error Could Occur	-	7	-
Loss of Trust	-	-	3
Total	11	11	11

Question 3

In your opinion, how can the Maccabi Healthcare Fund assist physicians who were involved in an adverse event?

As shown in the following chart, physicians suggest that following an adverse event their organization should learn from mistakes; provide professional support (social workers and psychologists) if necessary; promote an approach of NO NAME, NO BLAME, NO SHAME; and also provide practical and professional assistance to manage the consequences. It should be noted that these elements already exist in many Risk Management Departments.

Nonetheless, there appears to be room for further development of support systems and the provision of increased professional assistance, as well as enhancement of the NO NAME, NO BLAME, NO SHAME culture. Apparently, the prevailing medical culture has incorporated into the system an attempt to learn from errors and in many cases routinely provides professional consultation and assistance to manage an adverse event.

Question 4

Suggestions for Managers to Help Physicians Following Involvement in an Adverse Event

Statement	**N**
Learning from Errors	11
Managerial Support + Professional Support	11
Promoting the Culture of NO NAME NO BLAME NO SHAME	8
Professional Assistance in Managing Adverse Events	5
Total	**35**

D. Comments from the Head of Medicine

On March 6, 2016, I met with the Head of the Department of Medicine to present my research and obtain his input for an intervention plan to support physicians following involvement in an adverse event. Prior to the meeting I sent him the abstract, hypotheses, and the results of my research, and during the meeting I presented this chapter as well as the theoretical background and summaries of the interviews with the physicians.

The Department Head expressed surprise that the NO NAME, NO BLAME, NO SHAME culture had not already been fully assimilated by all Maccabi managers. However, he was well aware of the problem of the lack of empathy among physicians.

When I requested that he answer question three, he responded that one way to support physicians is to make sure that all doctors are aware of the impact of an adverse event on the physician involved and suggested that this information be disseminated via professional magazines or the Maccabi Healthcare Fund website.

He added that the managerial level should also be made aware of the consequences and asked that my study and its implications for the professional functioning of doctors be presented, remarking that this should lead to increased empathy and an atmosphere in which there will an openness to learning from errors. He said this would be preferable to the

tendency to apportion blame or to dismiss adverse events as inevitable without addressing issues of prevention and support.

A further suggestion was to establish a forum of caregivers and patients which would convene following an adverse event to discuss the event, share reactions and needs, and choose how best to support the patients and physicians who were involved. He felt that the preceding suggestions would effectively meet the needs expressed by the doctors who were interviewed.

During my three years of studying the personal and professional implications for Maccabi Health Fund General Practitioners following involvement in an adverse event I chose to approach the subject empirically, based on data in the Maccabi computer system, as opposed to relying solely on questionnaires, which was the approach of most research into this topic.

I found evidence that physicians involved in adverse events subsequently adopt patterns of defensive medicine and avoid interaction with patients.

I then undertook mini qualitative research that to a large extent validated the findings of my empirical work.

It is plausible that this paper may trigger a process of change at Maccabi that will lead to a redefinition of and upgrade to the way that the organization responds to and supports physicians involved in adverse events.

I have grounds to believe that this work will lead the way to further improvements in patient safety by providing insight into how caregivers react professionally following involvement in an adverse event and what may be done to assist and support them. It is my hope that this will enable physicians to return as quickly as possible to a high level of professional functioning.

Summary

The major goal of the present study was to examine the impact on the clinical behavior and professional conduct of General Practitioners caused by their involvement in an adverse event that results in harm to a patient. The findings raise a number of issues for further research.

My research reveals that during the month following involvement in an adverse event there is significant impact on a doctor's functioning. This impact may manifest itself in the adoption of defensive medicine and/or avoidance behavior which can be measured by an increase in referrals of patients to the ER and a tendency to both see fewer patients and to see patients less frequently.

Some of the findings of the current research support those revealed by previous studies. This study points to the need to explore additional issues, such as the evaluation of existing intervention programs for doctors who were involved in an adverse event that caused harm to a patient, and the development of tools to help the individual doctor and the system as a whole to cope with the repercussions of an adverse event.

The findings of the study both validate and heighten the complexity of the consequences that result from involvement in adverse events and grant legitimacy for care providers to openly relate to and share those consequences, while also calling on the medical system to provide adequate support.

This study is unique in that it compares the professional functioning of General Practitioners both prior to and following an adverse event. However, unlike most studies of this kind that rely solely on self-report questionnaires, especially among care providers in hospitals, the present study examined its hypotheses by measuring external data.

This study clearly validates the insight that involvement in an adverse event which results in harm to a patient has major repercussions on the care providers involved.

I hope it will also constitute a milestone in the quest for deeper understanding of the processes that comprise those repercussions. As more experts examine this subject the data is gradually accumulating and the resulting knowledge will hopefully provide increased support for caregivers who are involved in adverse events. This study also points to the importance of tackling the challenges involved in understanding the "second victim" phenomenon.

It is high time to acknowledge that the famous quote below applies to medical professionals as well.

"To err is human to forgive is divine." (Alexander Pope, 1688-1744)

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Appendix

Table 6.

Means and standard deviation of the research measures before and after an adverse event

		Groups					
		Caused harm		Harm		No event	
Variable	Time	*M*	*SD*	*M*	*SD*	*M*	*SD*
ER	before	3.05	1.98	3.82	3.30	3.87	2.63
	after	3.52	3.34	3.77	4.80	3.42	1.95
BIT	before	175.10	122.03	210.68	148.79	269.63	183.62
	after	176.00	124.19	213.43	157.85	256.92	169.61
LABORATORY	before	2.99	1.41	2.72	.87	3.18	1.30
	after	2.97	1.23	2.64	.93	3.09	1.02
VISITS	before	810.04	477.76	820.24	474.70	607.42	418.70
	after	755.99	431.67	822.57	496.41	647.52	446.35