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"There Are Many Cases That You Carry with You That Leave Scars": Burnout and Secondary Trauma among Pediatric Residents in Routine and Covid Times

Or Kaplan*, Michal Kaplan, Rotem Shalev, Michal S. Maimon

Department of Pediatric Emergency Medicine, Saban Pediatric Medical Center, Soroka University Medical Center, Ben Gurion University of the Negev, Be'er Sheva, Israel
Email: *kaplan.or7@gmail.com

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Abstract

The current research joins previous studies in examining post-traumatic stress disorder (PTSD) and burnout among healthcare workers. The research focuses on the experiences of pediatric residents working in an emergency department both in normal times and during the Covid pandemic. Research conducted prior to and during the Covid pandemic outbreak shows negative psychological effects among healthcare workers. Most of that research was conducted within the positivistic-quantitative paradigm. The current study is qualitative and focuses on pediatric residents who provide medical services to a unique population in a peripheral region of Israel, namely the Bedouin-Arab population. The research questions are the following: What characterizes pediatric residents' work, in general and during the pandemic? Do they show signs of burnout and secondary trauma? How do they perceive their work with the Bedouin-Arab population, especially during the pandemic? The study, conducted within the phenomenological genre, included 14 pediatric residents in a large hospital in Israel's periphery. Semi-structured clinical interviews were employed, in addition to questionnaires that examined PTSD and burnout to enhance the reliability of the findings. The results show that all residents reported stressful incidents in which patients' physical integrity was threatened. The residents described the special nature of the medical cases they treated in routine times and during the pandemic outbreak, which stems mostly from the specific characteristics the population of Israel's periphery. While at the early stages of the pandemic, the residents experienced reduced work pressure, they reported substantial difficulties later in the crisis, which intensified their sense of physical and emotional stress. Most residents re-

ported feeling inadequately prepared for dealing with traumatic events. According to the results, most residents displayed secondary trauma (12 participants in interviews and 11 in questionnaires), which can be classified into categories based on the DSM-5. In the interviews, all 14 participants reported various signs of burnout. The questionnaires indicated burnout symptoms among 10 participants. Giving a voice to pediatric residents, the study highlights the complexity of their routine work as well as their role during the Covid crisis. Based on the findings, recommendations have been made for policymakers. The study highlights the importance of raising awareness to the implications of the residents' rough work conditions in routine and emergency times and to the need to develop social support and intervention programs that might improve their well-being during their professional work.

Keywords

Burnout, Covid-19, Pediatric Residents, Post-Traumatic Stress Disorder

1. Introduction

Working conditions of medical residents in Israel have been at the center of public discourse and protest for several years. Residents have been struggling to change the reality of their daily work, which includes shortage of human power, intense and long (26-hours) shifts, responsibility over dozens of patients, and making critical professional decisions under psychological and physical exhaustion. The Covid pandemic enhanced these difficulties [1].

The implications of such work conditions, which resemble those of medical residents in other countries, are evident across various specialties [2]. Previous research has examined different aspects of physicians' work environment. Burnout among health care workers (HCWs), including physicians, is a well-known problem [3]. Studies have reported secondary trauma [4] and compromised well-being [5] [6] among other adverse effects. Covid-19 has presented HCWs with additional challenges, increasing physical and emotional stress among physicians [7] [8] and residents [9].

The current study was carried out in one of the largest hospitals in Israel, which is located in a peripheral region of the country. There is much evidence of inequity between central Israel and its geographic and social periphery in income, health, education, and other aspects [10]. Recent literature has shown a substantial shortage in physicians in Israel's periphery compared to the country's center and big cities [11]. Peripheral areas display more infant mortality, shorter life longevity, higher rates of preventable chronic diseases such as diabetes, and prevalence of unhealthy habits such as smoking, compared to the rest of Israel [12]. Physicians in these regions must meet complicated medical needs due to the lifestyle of some of the local populations [1]. For example, the Negev region of southern Israel is home to 270,000 Bedouins, who make up 20% of the re-

gion's population [13] and have unique medical needs, especially the children [14]. This gives rise to one of the biggest challenges of the Israeli health system: to increase the number of physicians in Israel's rural and peripheral areas, especially during the residency, when many young physicians acquire their expertise, plan their future, and decide where they will settle and work [15].

Given this reality, it is important to examine the residency experience of these young doctors, who work under tough conditions and must respond to the singular needs of communities in the country's periphery, in this case the southern regions. In addition, the study focuses on the Covid outbreak, which further intensified the efforts of HCWs [3], including physicians and residents [16]. The study is dedicated to pediatric residents, showing how the physical and emotional stress they experience can be traced to four sources. First, their everyday work conditions are uncomfortable; second, they provide healthcare to a peripheral population with complex medical needs; third, they work in an emergency department, where they handle the most acute cases; and finally, they had to deal with the additional challenge of a global pandemic.

Most of the studies that examined the psychological effects of residents' work conditions in routine and pandemic times were conducted within the positivistic-quantitative paradigm. Yet there are also qualitative articles that address the psychological and physical effects of Covid. Some of these qualitative studies focused on internship [17], others on HCWs including physicians (such as a study conducted in Israel) [18], and others on physicians only [5] [19]. A review from 2021 written by Turner *et al.* [20] examined Covid-related perceptions and experiences among policymakers in health organizations. The researchers identified 25 qualitative studies that focused on HCWs and physicians, but none dedicated to residents. Other studies examined a range of specialties, such as internal medicine [21] or general surgery [22].

The current study is qualitative and phenomenological, giving a voice to pediatric residents. It enabled us, as researchers, to hear their stories and personal experiences, learn about their inner personal and professional worlds, and hear firsthand about their difficulties during both regular times and pandemic times. The article focuses mostly on secondary trauma and burnout, two psychological effects that may be related to working under continued stress. We also examined the effect of treating a specific population living in Israel's periphery on the residents' experiences.

In the first section, we present findings from the literature regarding burnout, trauma, and secondary trauma among residents. Then we touch on the Covid outbreak and its implications for the general public and for medical teams.

2. Trauma, Secondary Trauma, and Burnout among Healthcare Providers

Adverse psychological effects on healthcare providers are a well-documented phenomenon [23]. Substantial research has examined the role played by the work

conditions of physicians, and specifically residents, in secondary trauma [4] [24] and burnout syndrome [25].

Trauma is defined as a stressful and disturbing event that stands outside the regular human experience. According to DSM-5, a trauma is often a serious threat on one's life or physical integrity, helplessness, or panic [26] [27]. Secondary trauma is defined as stress caused by assisting individuals after trauma. People in contact with trauma survivors may develop a traumatic reaction without directly experiencing the traumatic event itself [28]. This definition of secondary trauma also appears as a potential etiological source for post-traumatic stress disorder (PTSD) in the most current edition of The Diagnostic and Statistical Manual of Mental Disorders, or DSM-5.

In the event of an accident or situation that threatens life or property, first responders are the first to appear at the scene. These are professionals and volunteers that have been especially trained to deal with emergencies, and they include physicians, police force, firefighters, search and rescue teams, emergency personnel, and paramedics [29]. These professionals have varying roles in responding to critical events. What they all share is their immediate presence on location and being first to provide victims with care [30]. The exposure to life threatening situations that carry traumatic potential, and working with survivors and their families, may affect these emergency teams, leading to high levels of stress and diminishing their coping capacities. First responders, therefore, may also be at risk for PTSD [31].

Several studies have examined PTSD among residents in different specialties, such as surgery [24] or internal medicine [21]. A study by Kolehmainen *et al.* included both qualitative and quantitative methods. Interviews revealed 28% of PTSD is related to a life-threatening medical procedure. In questionnaires, 14% of residents reported PTSD symptoms.

Burnout syndrome among medical teams is a state of physical and mental fatigue in response to pressures in the workplace related to treating patients [9]. This psychological state is common among medical residents in different specialties [25]. The symptoms of burnout include emotional exhaustion, which leads to diminished ability to help people; depersonalization, leading to negative reactions to and perceptions of patients; and diminished personal accomplishment, which causes negative self-evaluation and dissatisfaction with one's self-fulfillment at work [32].

In the last decade, much research has been dedicated to burnout among physicians, indicating that burnout is on the rise [33]. Evidence associates PTSD symptoms and burnout among medical teams [32]. Physicians' burnout is costly: it leads to potential errors in medical treatment, depression, suicide risk, and drug abuse; it also increases dropout, reduces professional effort, and causes instability in the health system due to frequent personnel replacements, among other effects [25] [34]. A review conducted by Rodrigues *et al.* included 26 articles with 4664 participating residents. The researchers found a general rate of 35.7% burnout among medical teams. The study further found differences in burnout rates

among residents in different specialties. Pediatric residents were found to have 30% burnout [25].

3. The Covid Outbreak and Its Implications for Medical Teams

Studies have shown that the Covid pandemic had a significant effect on people's mental health worldwide [35], including in Israel [36]. The adverse effects of the pandemic were reflected in the psychological and professional coping of medical teams [3] [8] [23]. In a recent study carried out among 1257 HCWs in Covid wards in China, a considerable number of workers reported symptoms of depression, anxiety, sleeplessness, and distress [37]. A study by Shanafelt *et al.* pointed at specific Covid-related causes of anxiety among physicians and residents. These included inadequate access to personal protective gear, putting family members at risk of infection due to exposure to the virus, and the limited accessibility of Covid tests [38].

In Israel, the pandemic posed multiple challenges to health system personnel, particularly to medical teams, causing severe stress and high levels of burnout. Health system employees had not been prepared to deal with the pandemic and drastically change work procedures to react to the new health threat [1]. The effects of Covid on medical teams correlate with the findings of past research that examined the psychological effects of pandemics, such as SARS [39]. The challenges for medical teams posed by the Covid outbreak included a serious threat to their personal safety in a manner that meets the definition of trauma.

Even though stress and burnout among physicians in various specialties had been reported before Covid [2], these reactions grew with the outbreak, especially among residents [40], particularly those from emergency units, as they stood in the frontline by administering patients to the unit [9].

4. Israel's Bedouin Community and the Special Medical Needs of Bedouin Children: Specific Case Study of Life in the Periphery

About 20% of the population of the Negev region in southern Israel belongs to the Bedouin community [13]. Surveys show that this traditional and collectivist society has the lowest socio-economic status in the country [41]. Its medical needs differ from those of other populations, especially among the children [14]. The unique ethnic and geographic nature of the Bedouin community adds a special angle to this study, especially when compared to other studied populations in other parts of Israel or the world. To investigate whether this contributed to residents' stress, we examined their perceptions regarding treating this population.

Healthcare for children in southern Israel has special characteristics. According to a report by Myers JDC Brookdale [14], about nine percent of the Bedouin children in the Negev–more than in both the general Arab or Jewish populations of the country–suffer from a functional disability (such as physical disability,

deafness, retardation) or a chronic disease requiring continued medical care. Some of the Bedouins live in unrecognized villages, where permanent housing or electric power are absent, making for harsh living conditions. These dictate to a large extent the nature of medical help sought by the Bedouins. They often seek help, for example, for physical injuries, scorpion or snake bites, pesticide poisoning, burns (due to unsafe heating systems), and animal-transmitted infectious diseases [42].

The Bedouins have limited access to medical services, and they exhibit low levels of trust in the healthcare system. When they actively seek medical help, they are often already suffering from an acute clinical condition. Thus, Bedouins are at higher risk for in-hospital admission compared to the Jewish population [43]. Furthermore, because of a language barrier and the need to use the services of interpreters, taking anamnesis is often delayed, making for longer wait time in the emergency room for Bedouin patients. In addition, the Bedouins are less inclined to follow through with the prescribed treatment and complete the medical inquiry as directed [43]. The study by Plakht and colleagues [43] outlines the characteristics of the Bedouin population and notes how the medical services they require in the emergency department differ from those of the general population. The study presents the ethnic disparities as seen in the emergency department in southern Israel.

5. The Current Study

Based on today's knowledge regarding the psychological and physical effects of medical work in the context of life-threatening situations, both routinely and during the pandemic, the study focuses on pediatric residents, whose duties include emergency room hours. The study employed semi-structured clinical interviews and questionnaires to test for secondary trauma and burnout. The interviews were intended to obtain a close look at the residents' experiences and examine the role played by their specific type of work during the pandemic in their difficulties, sense of emotional well-being, and possible reactions of secondary trauma and burnout. In addition, the study examines the implications of working with a specific population in Israel's periphery.

Research Questions

1) What characterizes the work experience of pediatric residents, especially during the Covid outbreak?

2) What expressions of burnout and secondary trauma are demonstrated by the residents?

3) How do the residents perceive working with the Bedouin-Arab population, particularly during the pandemic?

6. Method

We conducted constructivist-qualitative research within the phenomenological

genre, which examines the subjective experience of individuals and the meaning they give to a phenomenon. In accord with the principles of qualitative research, the findings of the specific case study can be generalized to other populations with similar features, such as residents in other hospitals [42].

6.1. The Research Arena

Participants were pediatric residents in a large hospital in the periphery of Israel. Pediatric residency lasts 4.5 years and includes rotations in children, newborns, and premature infant wards, emergency pediatric medicine, day hospitalizations, and pediatric intensive care. Residents work in 26-hour shifts.

The pediatric emergency medicine department, where the research was conducted, is considered one of the busiest in the country. Despite its big patient load, the department is understaffed. It handles acute, medically complex cases, thus exposing residents to serious illness and mortality, which evokes emotional involvement. Working under difficult physical conditions, the staff is sometimes subject to physical and verbal aggression [44]. The hospital serves about one million people in southern Israel, while the pediatric emergency department serves 180,000 children. Every day, between 100 - 150 children (sometimes more) receive care, at times for severe cases such as infectious diseases, poisoning, and traumas of various kinds.

6.2. Participants

Fourteen residents participated in this study. The number of participants was determined based on the criterion of "exhaustion", which was evaluated during the interviews. Demographic data was collected. There were seven male and seven female residents among participants, as well as seven Jews and seven Arabs (five of whom were Arabs from northern Israel and two were Bedouin-Arabs from the south). The ages ranged between 29 and 40 (11 participants were 31 - 40 years old). Two participants were in their first or second year of residency, six in their third year, and six in their fourth year. Eight participants had studied medicine in Israel, while six had been schooled abroad. Three residents were single, eight were married with children, and two were married with no children. All the participants were pediatric residents working in the hospital's pediatric emergency medicine department (a purposeful sample). The sample included participants who agreed to participate after receiving an explanation about the research.

6.3. Research Tools

A clinical semi-structured interview was used, based on an open question and additional questions in specific areas [42]. At the first stage we signed an agreement with the interviewees, guaranteed confidentiality, and collected signatures on informed consent forms. The second part was dedicated to collecting background information. The third part was composed of an open narrative ques-

tion: "Tell me your story as a resident, particularly during the Covid outbreak."

Then interviewees were asked additional questions on various topics: general experiences (for instance: "What characterizes your work experience during the residency, especially during the pandemic?"); or exposure to potentially stressful situations (for example, "Have you been exposed to severe injury or death risk of a patient? Have you heard from patients about a frightening event? Describe the case, what happened and what your role was.") This section included details that we will present below. The next sections included questions on various topics, such as burnout (for example, "Do you sometimes feel fatigued, a feeling that it's hard to get up and go to work?"), dealing with the pandemic (such as, "How did Covid affect your residency?"), the quality of the training and residency (for instance, "Looking back at your medical training and residency—what has prepared you to cope with the reality you encounter at work?") and ideas for improvement (such as, "What would you suggest to add or change in the residency program, and why?").

Within the topic "Exposure to potentially stressful situations", some of the questions were aimed at identifying post traumatic symptoms, based on the criteria for PTSD found in DSM-5 [45]. We also based on a document published by the Israeli Ministry of Health [45] according to which, preliminary PTSD screening can use DSM-5 to identify symptoms. Such evaluation can be based on a preliminary clinical interview or a specific questionnaire [46]. Additionally, participants completed self-report questionnaires that examined secondary trauma and burnout to support the credibility of the findings. These questionnaires are described below.

Secondary Traumatic Stress Scale—STSS

Secondary Traumatic Stress Scale (STSS) [47] [48] is a 17-item questionnaire designed to measure the negative impact of indirect exposure to traumatic events in HCWs caring for suffering or traumatized clients. Respondents are asked to indicate how frequently the item was true for them in the past seven days on a 5-point Likert scale ranging from 1 (never) to 5 (very often).

The STSS has a global score and three subscales: *Intrusion* (five items), which refers to recurrent and intrusive distressing recollections of patients, including images, thoughts, or perceptions; *avoidance* (seven items), which measures the avoidance of stimuli associated with the care of patients and the numbing of general responsiveness; and *arousal* (five items), which assess symptoms such as irritability, hypervigilance, difficulty concentrating. The STSS global score is calculated by summing up all the item scores, with a higher score indicating a higher frequency of symptoms. The total score ranges from 17 to 85 and is categorized into no/little (17 - 28), mild (28 - 37), moderate (38 - 43), high (44 - 48), and severe (49 - 85) levels of secondary trauma according to previous literature [47].

Shirom-Melamed Burnout Measure (SMBM)

The validity and reliability of the SMBM has been previously established [49]. Specifically, it comprises three dimensions: physical fatigue (six items, e.g., "I

feel tired"), cognitive weariness (five items, e.g., "I have difficulty thinking about complex things"), and emotional exhaustion (three items, e.g., "I am unable to invest emotions in my colleagues at work"). Items were scored on a 7-point Likert scale, ranging from 1 (never or almost never) to 7 (almost always or always). Mean scores were calculated for each construct and then summed to create a burnout sum score as previous studies [50] [51]. To categorize the means, the following preestablished interpretations were applied to the SMBM scores: ≥2.75 = mild burnout, ≥3.75 = high burnout and ≥4.40 = clinically relevant burnout [52].

6.4. Procedure and Ethics

The study was approved by the Ethics Review Board of the Faculty of Health Sciences in Ben Gurion University of the Negev. Prior to the interviews, explanations about the study and its goals and a guarantee of anonymity were given to participants. They agreed to be recorded and gave inform consent to participate. The interviews were conducted online using Zoom, each interview session with two participants in a closed room to assure privacy. Ethically, no specific information about participants was given to anybody within or outside the hospital. Analysis of the data was general and provided an overall picture without exposing personal details. All names used in this article or pseudonyms.

The Ethics Review Board of the Faculty of Health Sciences in Ben-Gurion University of the Negev.

6.5. Data Analysis

The interviews underwent thematic content analysis, which comprised a number of stages [42]. In the first stage, a holistic reading of each interview was carried out. In the second stage, the information was classified into units of meaning according to themes, and initial categories were created. In the third stage, the themes were mapped to formulate the full array of categories.

The research team first analyzed together three interviews and discussed disagreements (e.g., different views relating to themes or relevant quotes). This dialogue helped the researchers to reach a consensus and strengthened the reliability of the study. The analysis of the closed questionnaires is presented in section 6.3 (Research Tools).

7. Findings

The study points to the residents' difficult work conditions both in normal times and during the Covid outbreak. It presents the complexity of the medical cases they treat, especially those typical of Israel's peripheral regions. The residents described acute medical cases they had encountered and characteristics of their work environment, which are considered among the causes leading to symptoms of PTSD and burnout.

The interviews yielded eight themes. The first focuses on Israel's southern periphery and contains two sub-themes: 1) the characteristic of the region's Be-

douin population and its unique medical needs; and 2) the Bedouins' attitudes towards the pandemic. The second theme presents the unique medical cases that the residents had encountered. The third theme focuses on eight difficulties experienced by the residents during Covid. Theme four addresses the effects of Covid and its advantages and disadvantages from the residents' perspective. Themes five and six are dedicated to displays of secondary trauma and burnout among the residents. Theme seven relates to the level of preparedness of the residents for coping with complex situations and to emotional support given during the pandemic. In the last theme, residents proposed ways to improve their medical training. Below we introduce each theme in detail.

7.1. Theme 1: Working in Israel's Southern Periphery

The first theme focuses on the nature of the population cared for by the residents. It has two sub-themes: the first addresses the uniqueness of medical cases in southern Israel. The second sub-theme relates to the characteristics of the Bedouin population during the Covid outbreak.

Sub theme 1.1: the nature of the region's population and the uniqueness of its medical needs

Residents described the special nature of the cases they encountered in their daily work, which are typical of the population of the Negev region in southern Israel, as reflected in Shlomo's description.

> Some cases are hard because of the life conditions of the population. I am talking about the Bedouin sector. There are many severe cases, difficult life conditions and more exposure to danger [...] It is terrible. Children get electrified, or eaten by rats, rats bite babies, or children get hit by donkeys and camels, many children get hit by cars. More than in the general population. (Shlomo)

According to Itay, providing healthcare in the Negev poses complex challenges to physicians, exposing them to more lethal cases than in other parts of the country.

> We live here in the Negev and we are very different from the rest of the country because we're a kind of third-world country because of the population close to us. There are many accidents there and many cases of neglect. We are exposed to children mortality much more often than in other parts of the country […] Inhaling gas, fires, children left in cars that arrive here dead. This is a rate of accidents that doesn't make sense and happens especially here in the Negev. And this is frustrating and irritating and it's really not logical that in this country, in these times, such things happen. (Itay)

Michelle speaks sadly about the children's fate.

> Because a child does not choose where to be born, you can be born to a family in Caesarea, or you can be born to a family living in a shed, a Be-

douin family; there is one place with electric power and one place without, which has a generator, and you cannot choose. If you are unwatched and you were left alone and no one was there to help you, this turns out to be your fate, and probably, had you been born to a different family, maybe this wouldn't have happened to you. (Michelle)

Sub-theme 1.2: The Bedouin population during the Covid outbreak

The residents described the attitudes of the Bedouin population during the pandemic as they saw it. Bedouins were less inclined to get vaccinated, wear masks, and sometimes did not adhere to quarantine guidelines. According to some of the residents, the Bedouins did not treat the pandemic seriously, perceiving it as an insignificant virus or a doctors' story. These perceptions can be seen in the quotes by Katya and Amir.

When I started with Covid I knew, it was obvious to me that there were difficult children, we live in the south and there's a sector that's highly affected by Covid. (Katya)

People close to me went to get tested and vaccinated, but if you're talking about the village, or the sector in general, many of the people didn't take it seriously. At first they didn't get their vaccines, didn't wear masks… said Corona is like a regular virus. (Amir)

Shlomo reports that many Bedouin children arrived at the hospital seriously ill.

When there is Corona, many children missed their vaccination and follow-up and many things were damaged. A person with strength and resources can control the situation somehow, but a weaker person gets lost a little. This is what I think happened with a lot of the Bedouin population. Many children arrived at the hospital very sick, arrived too late… from what I saw. (Shlomo)

Michelle speaks angrily about how the Bedouins concealed the truth for various reasons, which she perceived as disrespect.

That made me angry, they took it very lightly, it's not just specific to Corona, that's how they relate to a lot of things that they conceal information. Is it because of shame? It is because they do not want others to know about them? They could be positive for Covid and the child's present illness could be Covid-related, but because they were embarrassed to be positive they would just lie and it hurts you too because they don't care about your health, they disrespect the medical care you want to provide to them, and it's infuriating. (Michelle)

Itay reported how the Bedouin population did not keep social distancing, which caused increased infections.

The Bedouins, as a society, find it hard to accept authority, so all these reg-

ulations and these things, everybody was social distancing but there you see that they have weddings with hundreds of guests. All the "red cities" were in this sector at first, because they didn't adhere to mask wearing and social distancing. It's quite problematic, when patients walked into the hospital I had to bring them a mask. At some point they started following the rules and realized that it was not a simple disease, but there was indeed some carelessness.

7.2. Theme 2: What Are the Residents Exposed to? "Every Doctor Has a p Graveyard" (Mussa)

The interviewees were asked about serious incidents, such as when a patient's life was threatened. The interviews brought up four traumatic stories from the Covid time and 24 stories unrelated to the pandemic. Some interviewees had two or three such stories. The Covid-related cases were about caring for sick children and toddlers, death of children, and one case of treating a pregnant woman. The other stories exposed the residents' daily routine of performing CPR on children and toddlers, death, severe injuries, raped girls, and more. These cases have left their mark on the residents, as Itay said: "There are many cases that you carry with you that leave scars." The residents told these difficult stories at length, sometimes with chilling details. The following quotes represent these stories, as there were too many to include all.

The residents described incidents of children's resuscitation and death.

> Every physician has a personal graveyard. I am not different from others, I have a few experiences of children I had to resuscitate and passed away or were in acute condition. Or in a state, let's call it irreversible, died too soon […] Every time there is a discussion of a child who dies, you think of your own personal graveyard. (Mussa)
>
> I saw babies who were seemingly healthy who died for no apparent reason. It was not clear what they died of. This is a shot in the heart for me; I have babies of my own, thank God I had babies before I started in the premature infants' ward. (Katya)

The cases handled at the hospital are severe, as Amir says: "Half the children are hospitalized with trauma, falling from height, car accident, there's always trauma, always" (Amir). Dana describes in detail a traumatic case she was involved in. Because of its emotional force and effect on her, she was hesitant about sharing it in the interview, wondering how one may react to the shocking details of the story. Due to the disturbing content, some of the detailed medical descriptions have been removed from the quote.

> I received a boy, 14 or 15, who had to have his limbs amputated because of a serious blood infection, which interrupted the blood flow to his legs. They had to be deeply amputated because the tissue was damaged and infected […] and my first thought was, the boy is going to die in my hands, what do

> I do now. And I don't know how but we managed to do it and we bandaged it tight enough to stop the bleeding […] As a resident, to get such a case wasn't a simple experience, and I remember that after the shift I was in such a shock I said to myself, I won't go home now, I'll go buy myself something nice and I'll sit with friends, and only then I went to sleep. I didn't want to end the day like that. (Dana)

7.3. Theme 3: Residents' Difficulties during the Covid Outbreak

The residents reported eights major difficulties: 1) fear of being infected by the virus; 2) At first, when sick children were placed in adults' ward, the distance from the children's ward made it difficult to provide then with immediate care and personal treatment; 3) The interactions with the children and parents; 4) Compromised care quality; 5) The protective wear made movement harder and interfered with the connection with patients; 6) Fear of infecting family members; 7) Conflicts between staff members; and 8) Covid-related bureaucracy.

<u>Residents' fear of being infected by the virus</u>

The residents reported personal fear of virus infections. As pediatricians, they had been exposed to virus contaminations prior to Covid, yet during the outbreak, every new case of Covid caused anxiety. "There was fear in the public, the patients, and us. A fear of getting infected, infecting others. It was very difficult." (Yossi)

> Yes, I had fears. I was afraid but I used protective gear and it protected me. I thought I was protected and that there was no choice, this is my job as a doctor, and you're protected and there shouldn't be a problem […] I always feared getting infected, whenever a child coughed in my face, but every time I found out the child I had just examined was positive, it was a different level of tress. (Yasmin)

Treating patients during the outbreak, especially specific medical procedures such as artificial respiration, exposed the physicians to the virus.

> You feel that you have his secretions and all these things so it adds a lot to your work, it's just more work for you […] I'm talking with you now and recalling and I start to have this bad feeling inside, how we used to quarantine for every patient we were exposed to or a nurse we ate with in the cafeteria, it was a nightmare. (Ibrahim)

Not having sufficient knowledge about the disease and care procedures also caused the residents to feel a sense of chaos.

> At first it was a different level of stress, for the staff and personally, so that every time someone in the ward was suspected as having the virus everyone was shocked. All the families knew about that case and there was anxiety and yelling, people didn't want to leave their kids there. It put stress on the staff, the families, and the kids. (Yasmin)

The special care zones for Covid-positive children

At the beginning of the outbreak, Covid-positive children were admitted into adult Covid departments, which made it hard to treat them. Physicians had to walk big distances to get to their patients, to use protective gear, and coordinate with teams from another department. This challenge is reflected in Fatma's quote.

> At first there was no Covid department for children and they were put in the adults' Covid department. It was hard, we had to leave our ward, walk over to the adults' area […] Today, thankfully, there's a children's Covid section in my department. There are several beds there for Covid-positive children, and it made a huge difference in my opinion, that the kids are in a children's facility, treated by pediatric doctors and nurses, and physically you can get there faster. (Fatma)

Interactions with patients and their parents

When the children were hospitalized in adults' Covid wards, it was hard to have direct connection with them, forcing physicians to cope with the physical distance and the need to communicate through electronic means. Communicating with the parents was also more difficult than usual. According to the residents, the parents acted differently. They were more concerned and treated Covid "as if it were cancer or something" (Fatma). The parents' anxiety caused a similar reaction among the residents.

> The parents are worried and this puts stress on the residents and physicians. They do it because they care, and I understand them, but recently it has been too much. There was a period when every child with fever, they thought he had the virus. They would come and insist on fully examining that, and you had to explain it again. It was hard to deal with the parents. (Salem)

Furthermore, sometimes the residents felt like the parents were blaming them for the child's disease and the quarantine and care procedures.

> People speak differently, act differently with the doctors. Like it's my fault there's Corona, my fault they are hospitalized. They would blame you that they get to the hospital, that someone is admitted into the department and you have to take blood tests for Covid and explain why they have to stay within the room until we get the results. And with every patient there was a half-hour long argument until I convinced them and then they would still never comply with it. (Abir)

Shlomo reports that parents were frustrated because "they felt in a kind of prison that they wanted to leave", *i.e.*, to get out of the special ward, and the staff had to explain to them that "in the current situation you can't be released, and it often caused a kind of frustration when you can't help […] It's a lot of exchanges with the parent and child, who are both 'imprisoned' in the Covid zone" (Shlo-

mo). Michelle describes having to separate a newborn from his mother, who was tested positive. "It was the most difficult part about the Covid period."

> When I was mostly in the infants and premature departments it was very hard. You take a baby from the parents' hands and don't give them a chance to see it in order to protect the baby. The hospital was not prepared to handle mothers who were Covid positive and had just given birth and this was a very big challenge. (Michelle)

Yossi recalled conflicts with parents who did not want to be admitted into the Covid ward.

> It took time to explain to the parents that their child has to be admitted and someone must stay with him and it's the Covid ward, this was the difficulty […] There were a few cases that the parents simply refused to be admitted, and we as decision makers couldn't release such a child who really needed hospitalization, and for them to understand that this was for the child's own good and trust you—it takes time. This was my difficulty. (Yossi)

<u>Compromised care quality</u>

Some residents reported that the pandemic period diminished the quality of care given to the children. Surgeries were postponed, preventing physicians from meeting the needs of children and their parents.

> There was a period when they required a negative PCR test before every surgery, and then surgeries got postponed and then we were not treating the children properly […] my feeling in those situations was that I wasn't giving the child proper care because of a viral disease that is a lot less risky for him than his condition. This is really very frustrating. (Fatma)

Abir recalled the case of a child who was admitted into a Covid ward for ventilated elderly patients because of blood contamination. The mother found it difficult to stay in the ward and thus Abir felt she could not properly respond to the girls' needs.

> I communicated the issue to my managers and superiors. I did not feel I could help either the girl or the mother. It wasn't entirely a medical issue, but I thought it important to meet her needs because of her mood and also because it affected the child. It was important but I felt we couldn't make it better for the girl.

<u>Wearing protective gear</u>

A central challenge mentioned by most residents was the need to use protective gear, which was time consuming. This was required mostly in the first wave of the pandemic, whereas later the physicians realized that the mask can provide the needed protection, as told by Fatma

> In the first wave, this whole thing of how to protect yourself and what to wear was different from today. Today we know that the most important

> thing is the mask; but then it was like an obsession, how to dress properly and how to undress, it took a long time. And it made our shifts difficult […] you didn't always have all the equipment. (Fatma)

In addition, the protective gear made the medical examination and communication with children harder to perform.

> The way you care for them when you can't touch them, can't put your hand on someone. You get there with your suit on and they don't recognize you because your face is covered and it loses all the beauty of the world of medicine, of personal touch […] Having the touch and warmth and the physical examination you can perform. You can't use the statoscope because you'd be breaking the protective suit, you can't properly examine the patient. (Itay)

Wearing the protective gear caused additional stress, as reflected in Yossi's quote.

> Working with the patients when you're covered with the protective suit, you're just losing it… I felt like a nervous wreck, ready to explode. It takes away from your patience and pretty soon you feel like you can't handle it anymore, you feel stuck in this suit and you sweat in it, and this was much too much. (Yossi)

<u>Fear of infecting family members</u>

Concern about the health of family members was also a typical worry of residents during the pandemic. Wishing to keep relatives safe of infection, the residents kept their distance, especially if the relatives were elderly or suffering from chronic illnesses.

> I was especially afraid to go back north to my parents'. My father has diabetes and high blood pressure. If I infect him, I kill him. So every time there was a slight chance that a patient I had examined was positive, or that I'd been exposed to a positive staff member, I would stay south and not visit anyone. This took a big toll on me… there was a whole year that I didn't hug my family. I didn't want to, I was afraid to infect them, I didn't hug or kiss them. (Yasmin)

<u>Conflicts between staff members</u>

Conflicts between staff members, especially from different wards, sometimes surfaced due to confusion regarding the responsibility over Covid-positive patients, as seen in Fatma's quote.

> At first when the children were admitted into the adults' Covid ward, it was not clear who was in charge of their care. Which nurses were supposed to treat the child—the ones from the adults' ward or our nurses from the pediatric ward? (Fatma)

Furthermore, fearing an infection, some staff members avoided treating the

Covid-positive children. This led to delays in tests, compromising children's care and putting them at risk.

> What was hardest for me during the pandemic was that children who needed urgent care or tests had to wait, not getting proper treatment because they were quarantined or Covid-positive, such as a CT scan […] once they heard the word 'Corona' everything changed […] I started crying, because I looked at the child and he was barely breathing. It was frustrating, to see a child suffering. (Fatma)

Bureaucratic difficulties

New protocols and procedures complicated residents' work during the pandemic. They were time costly and added to residents' workload, causing frustration and a sense of being underappreciated.

> I kept getting criticized, either I did not take the PCR test on time or didn't take one at all or didn't speak to the right people […] This is frustrating because you work very hard through the night, and then get reproached for these technical things. (Fatma)

Some of the residents felt that the hospital's strict procedures interfered with their work as physicians. They sometimes felt that while these bureaucratic measures were intended to protect patients and staff, they compromised lifesaving medical care.

> When the pandemic started, it felt like the rules, regulations, and bureaucracy were more important than saving children. (Katya)

Often, these new procedures and the inevitable confusion they created caused a sense of overload and helplessness, such as when patients admitted with a certain medical problem tested positive to Corona, delaying the immediate medical response they required.

> We felt a lot of uncertainty, also because of many new regulations, a disease no one knows anything about. It's a new disease that no one knows anything about, it's not in the literature, so they developed a lot of protective procedures and regulations […] If you admit a patient you have to talk to the whole world, the ward manager, lots of doctors, to take lots of tests, inform a lot of staff members. And if you want to discharge you are also limited, because you have to be responsible for discharging a child without doing a complete examination like you would have liked to do. (Shlomo)

7.4. Theme 4: The Effects of the Covid Pandemic: Advantages and Disadvantages from the Residents' Perspective

The residents reported feeling relieved at the beginning of the outbreak, when workloads decreased because the fear and uncertainty caused people to stay home and avoid a hospital visit unless they were seriously sick. For children, Covid was not considered a serious illness and thus fewer children sought medi-

cal care, allowing more rest time for staff. In addition, the lockdowns, social distancing, and other protective measures resulted in less respiratory illnesses. On the other hand, the residents we interviewed believe that the outbreak harmed their medical training because they saw fewer cases and the staff avoided gathering for medical discussions and debates. These issues were expressed by all the residents.

For example, Dana reported decreased workloads and then increased number of cases once the lockdowns were lifted.

> The lockdown period was a good period. There was actually a relief, because fewer patients came. There were less respiratory illnesses or other illnesses compared to the time after the lockdowns, which makes sense because people didn't meet and disease had no way of transmitting between people. Once the lockdowns stopped, we saw a rise in respiratory illnesses and more people came to the E.R. (Dana)

Michelle described the changes brought about by the pandemic and its successive waves.

> It really had advantages and disadvantages. In my case, I had the opportunity to experience things before and after the outbreak. Before Covid there was an insane amount of work, and after Covid it decreased significantly. On the one hand, there was less work; on the other, from the aspect of training, it was not as good. So indeed, the outbreak period gave some breathing space, and I had more time for my family. I can't say I could meet friends and go out because we didn't leave home much. Now that we're more or less back to the regular intensity, it's crazy to think we had worked like that before. (Michelle)

With the virus outbreak, residents' theoretical training was limited, such that some of them felt that it was harmed. There were fewer study hours, infrequent staff gatherings for medical discussions, and different kinds of medical cases to learn from. Yasmin described these changes.

> For almost a whole year we didn't have schooling. There were no frontal lessons, no case studies. We the residents learn from presentations of a certain case, but for a whole year there was nothing […] At first, when the ward was respiratory, for almost two months we saw nothing but respiratory cases and we didn't get any training on other cases, such as infections, liver, kidneys […] This hurt our training, one hundred percent. (Yasmin)

Some residents saw the full half of the glass and gladly accepted the challenges of the time. This is reflected in Mussa's quote.

> I think my residency became a lot more meaningful, because I was in this, let us call it front line […] Everything that happened, both the good things and the difficult things, have made me a better doctor, because I got the opportunity to treat patients in real time. (Mussa)

7.5. Theme 5: Expressions of Secondary Trauma

All the interviewees reported exposure to stressful situations related to the physical integrity of the patients under their care. Expressions of secondary trauma were detected among 12 interviewees and were classified into four categories based on the DSM-5's criteria for PTSD: [26] Re-living the event; avoiding trauma-related stimuli; negative shifts in cognition and mood; and changes in arousal and reactivity linked to the traumatic event.

Re-living the event

When re-experiencing the traumatic event, the interviewees demonstrated considerable physiological arousal upon exposure to internal or external stimuli that symbolized the traumatic event or evoked it otherwise. This is seen in the reports by Yasmin and Michelle.

> Yes, I'll feel it in my body, and I prepare myself in advance for anything, I'm prepared to feel it in my next CPR […] especially palpitation and agitation. I did not have difficulty breathing. But sometimes I feel stomachache. It's a feeling I have that's related to that. (Yasmin)
>
> Sometimes I might suddenly feel faster pulse, not something I think will interfere with my work. (Michelle)

There were also dissociative reactions and flashbacks evoking the traumatic event. In their mild form, such reactions can be short episodes during which the individual feels like he or she is experiencing the event; a more severe manifestation is a complete loss of awareness to one's surroundings. The residents in this study had short episodes, as we can tell from Dana's report.

> I have flashbacks. I accepted that as a normal response of the body. It is natural to get into shock from something like that. I think it is a normal reaction to a complex experience. It doesn't interfere with my functioning, it's there, part of my everyday experiences. If I see something it might remind me of something else. If there was a component of blame in those events, I'm assuming it would be hard to accept these flashbacks, but gladly this is not the case for most of these events. (Dana)

Another key symptom of re-living an event is the repeated appearance of evasive memories. These include visual images, thoughts, or emotions. Such reaction is reflected in Mussa's interview.

> A story that sounds similar brings up memories. It is associative, I remember everything well. The parents' reaction, the mother crying, the grandmother crying, how they looked, all the details. (Mussa)

The interviewees also recalled recurring unsettling and restless dreams evoking the traumatic event. Yasmin reported having "dreams and nightmares connected to the events."

> Sometimes at night I dream about work, especially if I am stressed before a

> workday or something, then things that happened in the past may appear in my dream. (Michelle)

Yasmin's quote also indicates the psychological distress deriving from exposure to either internal or external cues representing the traumatic event.

> After a week in which three children died and we had to tell the families, I guess I didn't realize how deeply affected I was, but when I was asked how I was feeling I cried hysterically for 15 minutes in front of everyone, then I understood that maybe it stayed with me, and even though I tried to leave quickly before I got attached, I guess it stayed with me. (Yasmin)

Avoiding trauma-related stimuli

When people are exposed to trauma, they may respond by avoiding related stimuli. Such stimuli may include memories, thoughts, or emotions linked with the trauma, or external reminders (people, places, conversations, or activities) that evoke trauma-related memories, thoughts, or emotions. Such response is demonstrated in the quotes by Adi and Yasmin.

> Shortly after, say if we had a difficult situation, then I didn't want to see the nurses that worked with me on that case because it reminded me, and there was a song that reminded me of the case because it used to play a lot in that time, so I would switch it off on my disc or on the radio. (Adi)
>
> It so happened that when I was in the E.R., I reported death to families three times. I did not tell that to anyone, because I felt that if I talked about it, it really happened, and if I ignored it, then it didn't happen. These moments are short; children arrive at the E.R and you call death. You can choose not to be there. I reported it and disappeared, I erased it […] If the case is tough, I try not to remember too many details […] My husband and I decided not to talk about it at home, probably because he knows that if I talk I'll start crying, so I avoid these conversations. (Yasmin)

Negative changes in cognition and mood

When describing the traumatic events, residents used negative emotional expressions, such as anxiety, depression, inability to feel positive feelings, guilt, and emotional detachment. According to Adi, "When I recalled these cases, it affected my mood. I became sad" (Adi).

Shlomo also described low spirits as well as emotional detachment and numbness that helped him cope.

> After such events, the spirits are down. Sometimes there is a high and a sense of, "this was an interesting and educational case", but most times you mostly feel down, a sense of tension releasing, depression […] I feel there's a permanent emotional detachment, you don't get fully involved; you're with them, but you know it's not you. You feel sad with them and happy with them, but you know it's not […] that you're emotionally detached. Not fully, but you guard yourself […]. (Shlomo)

Furthermore, following the traumatic case, residents described reduced activity, disconnect from social engagements, and a tendency to stay on their own. This is evident in Michelle's interview.

> Suddenly everything else in the world seems smaller in comparison. Especially after a hard working day when you see many things, you really don't feel like going out, I just feel like staying at home […] As we're speaking, I recall a weekend when I had a shift one day after the other and I think I had an anxiety attack or something […] and we were supposed to celebrate my birthday and I just said, I'm not leaving bed, not even to meet friends that came from out of town, because I just didn't feel like doing it. (Michelle)

Following a traumatic event, one might find it difficult to remember important aspects of the event. This is seen in Yasmin's quote.

> The brain erases from the memory, I don't even remember the name of the girl and it wasn't long ago, and I tell that story and they always ask me about my first CPR and the name and I don't remember, and other children I do remember. Even her face; I stood for an hour in front of her face, resuscitating her, I remember she had long lashes but that's all I remember. And it's weird because I'm supposed to remember details, but my brain probably decided to ignore it. (Yasmin)

Changes in arousal and reactions

Exposure to trauma may cause distinct changes in arousal and reactivity. We can see evidence for that in the sleep problems described by Yasmin.

> Ever since the residency began, I cannot fall asleep at night, and if I do fall asleep, I wake up in the middle of the night. It has been like that for a long time. (Yasmin)

In addition, the changes in arousal may present themselves in the form of irritability or angry outbursts, leading to physical or verbal aggression, as reported by Itay.

> I can't be sensitive to the patients, the family, the partner, friends. You don't have all the energy and all the resources to be empathic to others and sensitive to others and you're much more short-tempered, much snappier, and it no doubt has an effect. (Itay)

7.6. Theme 6: Indications of Burnout

All fourteen participants reported various signs of burnout, such as constant physical fatigue, emotional exhaustion, reduced empathy and sensitivity to patients, and negative emotions like depression, irritability, and anger. They also reported cognitive problems, including difficulty to concentrate and remember, making mistakes, forgetfulness, absent-mindedness, automatic functioning, and impatience towards families and close circles of people. These emotions provoked thoughts of quitting or attempts to avoid getting to the stressful place,

feeling a sense of "why do they bring us to a state of almost collapsing?"

The interviews brought up two main sources of burnout. The first is the nature of the residency: serious workload, multiple patients, long workhours, and coping with Covid-related challenges. The sense of burnout intensified as the residency progressed. Yet the pandemic, while causing new challenges, also brought some relief, when occasionally it led to reduced number of patients. The evidence of burnout crosses genders and sectors, showing up among men and women, Arabs and Jews. Below are some testimonies.

Physical fatigue: residents reported constant exhaustion, irregular sleep, and discomforts.

> I finish some shifts with difficulty walking, pains, I don't sleep well, when I get up I'm in pain. I need a couple of days to recuperate. (Dana)
> I have no energy. I just have no energy. Some days I would get up, and it is a day before a shift and I tell my husband, "Today don't talk to me. I'm having pre-shift depression, I don't want to go out. I don't want anything." (Michelle)

Burnout also expresses itself in emotional fatigue, which intensified with the progression of the residency and the pandemic.

> Sometimes there is this blues, sometimes there's... let's call it a feeling of chronic fatigue, things like that […] sometimes a short temper, sometimes irritability, arousal. (Mussa)

Residents also report cognitive problem, including difficulty to concentrate, inability to think about complex issues, memory problems, and making professional mistakes. Yasmin, for instance, spoke about the workload and consequent mistakes, like confusing between children and parents and forgetting certain aspects of the medical care.

> You get used to this place, it's intense and you get used to these numbers of children that you work with. But obviously it also causes mistakes. An embarrassing situation that sometimes occurs is that I speak to a father, and I think he's the father of a certain girl, and I tell him, for example, that we have to admit the child, but I got the wrong father and he doesn't understand what I'm talking about and then I understand and I tell him I got mixed up. Obviously, this is because of the workload. (Fatma)

Salam speaks of a sense of absent-mindedness, difficulty concentrating, and seeking to withdraw.

> Sometimes when you work many successive shifts, every other day, and you see less of your family, then sometimes you feel unfocused, unable to concentrate, you feel like staying in bed and not seeing anyone. (Salam)

Residents describe how the sense of stress and intensity cause them to try to avoid the stress-inducing place, as Yasmin reports.

> On my third month of residency, I'm not supposed to feel tired or burnt out, but it was the combination of summer and winter illnesses that suddenly appeared because of Covid, and it was an impossible ward, children with diarrhea and children on artificial respiration in summer. It was overcrowded and there was yelling and children in the corridors. It was tiring. I didn't want to go to work that month. It was frustrating. (Yasmin)

Michelle shared her thoughts about quitting the residency. Katya spoke about moments of crisis and a sense of unfairness leading to avoidance motivation.

> Every day I feel burnout. Every day. As we're speaking, I see that they sent me a message that they want me to come help tomorrow. I'm not obligated to, but they try to speak to my emotions. And in such moments, on the one hand I can't say no, on the other hand I feel like quitting this job already […] And some days I say that I feel like walking into the office and telling my boss that I'm done with this residency, I don't care anymore about financial security. I'll find a job cleaning, for all I care. No doubt, some days are like that. (Michelle)
>
> When there are several consecutive workdays, sometimes several weeks, there are many moments of crisis when I say, this isn't fair, just unfair, what's our purpose? Why do they bring us to a state of almost collapsing? There are many moments like that. The more I progress in my residency, the more exhausting it becomes, and this happens more and more often. It's not that I don't want to go to work, it's more like I don't want to go to my shift. (Katya)

The residents' fatigue and burnout affect their functioning, leading to unfair treatment of the families, loss of interest in the work, and reduced sensitivity.

> Suddenly I notice that in my shifts, I'm sometimes not so sympathetic to the patients, but mostly at the end of the shift, when you're really beat and tired and burnt out. Let's say that my attitude toward families at the beginning and the end of my shifts is not the same. Miserable people, really miserable, it's not their fault. (Michelle)
>
> Sometimes you also lose interest. Because some things become a routine for you. I still have empathy and I still care, but sometimes it's like—okay, another child with fever, another child with shortness of breath […] There's fatigue that's always there. You work in a manner that is—let's call it, automatic. (Mussa)

Themes 5 and 6—The quantitative questionnaires

Themes 5 and 6, which deal with secondary trauma and burnout among the residents, were examined by closed questionnaires (see Methods section). The findings from the questionnaires are presented in Table 1.

Findings from the secondary trauma and burnout questionnaires

The findings show that four participants had no burnout symptoms and three had no secondary trauma symptoms. The picture arising from the findings is of

Table 1. The results of Shirom-Melamed burnout Measure (SMBM) and Secondary Traumatic Stress Scale (STSS).

Participant number	SMBM Mean (1 - 7)	SMBM Physical	SMBM Cognitive	SMBM Emotional	Sum SMBM	STS total score	SUM STS
1	2.285714	2.166667	2.6	2	No burnout	36	Mild STS
2	4.857143	6.5	4.6	2	Clinically relevant burnout	44	High STS
3	1.714286	2	1.6	1.333333	No burnout	22	Little/no STS
4	2.214286	2.166667	3	1	No burnout	29	Mild STS
5	5.571429	7	5	3.666667	Clinically relevant burnout	56	Severe STS
6	4.571429	4.5	5	4	Clinically relevant burnout	54	Severe STS
7	5.928571	6.333333	5.4	6	Clinically relevant burnout	61	Severe STS
8	3.571429	4.5	3	2.666667	Mild burnout	39	Moderate STS
9	6.357143	6.833333	6.2	5.666667	Clinically relevant burnout	48	High STS
10	2	3	1.4	1	No burnout	21	Little/no STS
11	3	4.166667	2.2	2	Mild burnout	23	Little/no STS
12	2.928571	3.333333	2.4	3	Mild burnout	34	Mild STS
13	2.785714	3.833333	2	2	Mild burnout	35	Mild STS
14	4.214286	6.166667	3.2	2	High burnout	30	Mild STS

Notes: SMBM: ≥2.75 = mild burnout, ≥3.75 = high burnout and ≥4.40 = clinically relevant burnout. [52]; **STSS**: The total score ranges from 17 to 85 and is categorized into no/little (17 - 28), mild (28 - 37), moderate (38 - 43), high (44 - 48), and severe (49 - 85) levels of secondary trauma [47].

a complex reality in which residents show symptoms of both kinds (or of neither).

Two participants (Salem and Amir) had neither symptoms of secondary trauma nor of burnout. Two participants showed no burnout symptoms and presented mild secondary trauma (Fatma and Yasmin). One participant had symptoms of mild burnout and none of secondary trauma (Yossi). The remaining nine participants had symptoms of both burnout and secondary trauma.

Two residents whose interviews indicated no secondary trauma (Amir and Yossi) were also found not to have these symptoms in the questionnaires.

7.7. Theme 7: Being Prepared for Complex Cases and Receiving Emotional Support

Most residents testified not feeling properly prepared to deal with traumatic cases. Their reports indicate a marked gap between the theoretical training and the field experience. This is reflected in Mussa's quote.

> Nothing but the actual event can prepare you, when you have to deal with it. There's no actual preparation. I don't know how I would prepare residents one way or the other to deal with cases prospectively. Because everything they would have told me wouldn't have been a personal experience for me, and I wouldn't have been inside the situation myself to experience

its full emotional power. Even if you run a conversation with me about how and what to deal with, I don't think it will have the same impact as the actual event. (Mussa)

Residents also said that as they became more experienced, they felt better prepared to deal with complex situations. This is reflected in Adi's quote.

Every case prepared me for the following case: the fact that I saw more cases, had to deal with things, and people gave me advice, and there were things I took with me. But there wasn't anything specific before the residency that had prepared me. I don't even know if that's possible.

Being unprepared meant that traumatic situations had a more powerful effect on the residents. It also seems that the timing of the event—usually during a shift, requiring the resident to carry on with his or her work and see other patients shortly after—makes it more difficult to process, intensifying the need for emotional support. This is seen in Fatma's quote.

There was a case close to the end of my shift. It was morning, we were supposed to leave, and suddenly we heard that there was a shock room and we did CPR. But I was glad this was the end of my shift and after the PCR I could go home and think as much as I want, get stuck with it as much as I need. But if the shift had just started, it's weird, you performed CPR on a healthy baby and he died, and now you see a new baby who only has a runny nose, and the parents come and you talk to them and they don't know about what had just happened and they don't care. They want attention and to wait less, and it's really tough, to start a weekend shift with CPR. And then you have to continue with your shift for 24 hours. I feel that I need time to think about these cases. (Fatma)

The interviews clearly bring up the residents' need for professional support throughout their work. They also expose several issues that may make supportive discourse more effective. First, the residents need immediate support soon after the case took place. Second, some residents said they were hesitant about sharing their feelings in a group, thus different formats of support should be offered, including personal support where needed. These issues are reflected in Michelle's interview.

Sometimes there are attempts to speak, to sit together and have everyone share their feelings, but when this is done several hours after the event, it's no longer relevant for me. I don't feel it's helpful. I needed that at that time—this half hour to let it sink, to rest, and then return to my duties. But this is simply not going to happen on our job, we don't have the time for that, there are people waiting. It's also hard or me to sit and talk about it when I know there's work waiting for me outside. This makes it hard to process things […] They tried to talk about it in the E.R., but this was in a group and I'm less inclined to talk in a group. (Michelle)

Furthermore, when the support is given in a group, it is important to have

homogenous groups, with participants sharing similar backgrounds and thus able to identify with each other. This is reflected in Fatma's quote.

> I think that if I would sit with residents from my ward in development groups, it would be better because we would speak about the same things and they will be quicker to understand what I'm talking about, because we deal with similar things. (Fatma)

Emotional discourse and professional support also affect the residents' learning process, as reflected in Itay's quote.

> You have to have some kind of processing. You can't be a good caregiver without also being a patient and without processing your experiences. Yes, I recommend that people go to some kind of session and perform some processing, to look at things from the outside and not as a personal experience. This can help with the coping. (Itay)

Itay also believes that there need to be professional mechanisms for processing difficult cases.

> Hospitals do not focus on that. Even if a major event occurs, the hospital doesn't have some automatic mechanism for intervention right after the event. There are tools that you can use, but you have to be very active to make that system work. There is no automatic mechanism after you get exposed to trauma, or undergo a difficult experience, that provides immediate intervention. Sometimes people share with their colleagues, but they don't always know how to process it well or perform appropriate intervention, and often residents go home with these difficult experiences and have to deal with them alone. (Itay)

7.8. Theme 8: Ideas for Improving the Residency Program

The suggestions made by residents for improving the residency program are especially important because they stem from their practical experience. The implementation of these ideas has the potential to affect residents professionally and also emotionally, by reducing burnout and secondary trauma.

Enhancing emotional support and improving emotional discourse following critical events

Most residents expressed a substantial need for receiving emotional assistance and indicated the currently insufficient response to that need. This is reflected in Yossi's quote.

> I think we have to create more places where residents can come and unload, come and tell us about them. I think that every resident needs some kind of support, an attentive ear, to tell everything he's going through, otherwise you keep everything within […] We need to create more such platforms to vent, to come and speak about things we're going through, about difficult situations, difficult experiences, difficult dilemmas like the ones you have in

infants' wards and delivery rooms, where you debate whether or not to save the life of a girl. These are difficult dilemmas. (Yossi)

Improving work conditions

Most residents reported considerable distress relating to their work conditions, which include long workhours and frequent shifts. These result in unbalanced sleep and increased burnout, with an overall physiological as well as mental effect. At the basis of this issue stands a considerable shortage of manpower, which impacts the workload and the overall residency experience. This problem was mentioned by most residents. As Katya says, "staff, staff, only staff. More and more staff. I think this is the solution. The residency program in itself is fine […] but the problem is the burnout because of the workload." (Katya)

This issue is also addressed by Itay.

> Take off the overload. There's no better solution than to take off the overload. Also, from the aspect of manpower, it's the most critical problem. Because at the end of a day you're a person; no matter how, if you don't rest enough, don't get your break time, you have no time to invest in your patient and in yourself. Yes, you are a good doctor, but at the expense of health, being tired, your family life. All these things stem from the overload. For example, the difference between four shifts and six shifts is big, the difference between six and seven is huge. Between seven and eight—astronomical.

Improving the theoretical enrichment program

According to the residents, the lockdowns, quarantines, and social distancing of the Covid period have hurt their training. Some claimed that the theoretical enrichment program is unsatisfactory, and some wished to enrich the theoretical learning within the residency. This was proposed by Yasmin and Amir.

> The theoretical learning is important to the training. You get there in the morning with a cup of coffee and let someone teach you things that will stick with you, instead of working hard from the morning. This gives me a good feeling for that day. (Yasmin)
>
> I'd say, create a residents' group to meet once or twice a week and discuss a medical topic, a theoretical part. WhatsApp groups, podcasts, something that can improve, nourish, and teach. (Amir)

The residents also mentioned the need to improve their preparation for stressful situation, as reflected in this quote by Abir.

> They don't give you workshops on how to talk to families, to parents, let's say how to break bad news, all these things. No one gives you methods or tips on how to do that. You find yourself suddenly in that situation and you have to deal with it. (Abir)

Enhancing social ties within the staff

Many residents stated that the intensity of their work makes it hard to create

social ties with other staff members. Improving social interactions can become a supportive element in providing emotional assistance. It can serve as an additional platform for conducting emotional discourse and sharing experiences, as well as provide mutual support and enhance the sense of belongingness to the ward. These effects may help to reduce burnout and secondary trauma. The absence of such interactions was especially saliant in light of the social distancing forced by the Covid outbreak. Yasmin's quote relates to that.

> Fun activities with the staff, to get to know the people you work with half the day. Our fun day was cancelled a million times. It's necessary and important. (Yasmin)

8. Discussion

The current study examines the work environment of pediatric residents in a large hospital in Israel's periphery and its impact on the residents. It gives a voice to the residents as they describe their daily work during the Covid pandemic or in routine times. It presents unique medical cases they dealt with, their main difficulties during the outbreak, and the advantages they identified in that period. All the residents reported exposure to stressful situations related to the physical integrity of the patients under their care. They all served as "first respondents" [30], had a role in responding to a critical medical case, and were routinely exposed to physically and emotionally challenging situations. Most participants showed symptoms of secondary trauma and burnout. These findings ranged over all residents—male and female, Arab and Jewish. The findings are in line with those of previous research, which pointed to the physical and emotional effects on HCWs in Israel [18].

8.1. Residents' Working and Learning Environment during the Pandemic and in Routine Times

The interviews revealed that the residents' routine work is performed in a challenging environment. They treat multiple cases, work long hours, have negative interactions with family members, and suffer from fatigue and emotional overload. The residents reported that the early Covid period actually brought some relief, as fewer patients arrived and work was less intense. There were also fewer respiratory cases. Similar findings were reported by Creese *et al.* [5]

Yet the interviews brought up traumatic stories from both the pandemic outbreak and routine periods. The residents indicated eight main Covid-related difficulties: fear of contracting the virus; concern about the health of family members; distant placement of sick children; uncomfortable interactions with children and parents; protective outfits that interfered with free movement and with interaction with patients; staff conflicts; added paperwork; and frustration over the compromised quality of care under these conditions. Similar findings were reported by Shanafelt *et al.* [38].

The study lends support to findings from pre-Covid research, according to

which, medical professionals and especially residents suffer from stress and physical overload [23]. The current study joins other studies in indicating that the Covid pandemic added to residents' sense of stress and overload [3].

From the residents' professional perspective, the main disadvantage of the outbreak was that it affected their learning, as there were a smaller number of cases, fewer lessons and discussions, and disruption of the learning routine. Similar findings were reported among interns [17].

8.2. Secondary Trauma among Residents

Most residents displayed secondary trauma (12 participants in interviews and 11 in questionnaires). These can be classified into categories according to DSM-5: re-living the case, voiding trauma-related stimuli, negative changes in cognition and mood, and trauma-related changes in arousal and reactivity. Importantly, the two residents that did not express symptoms of secondary trauma in the interviews were also found not to have such symptoms in the questionnaires. In other words, there was almost full correspondence between the clinical interviews and the qualitative questionnaires.

The findings are in line with those of previous studies, where PTSD symptoms were found among HCWs in different countries [8], and specifically among residents in various specialties. For example, a qualitative study by Kolehmainen *et al.* [21], which examined PTSD among surgical residents using interviews, yielded similar responses from its participants and classified them into the different PTSD categories.

The consistent findings in the literature [53] and in the current study indicate that manifestations of PTSD are typical among HCWs, particularly medical residents. A review by d'Ettorre *et al.* lists the risk factors that predict PTSD: young age, scant experience, intense workload, perceptions of the workplace as being unsafe (e.g., lacking adequate equipment), deficient training, and little social support. Females were found to be more at risk. Some of these aspects were addressed by the residents in this study [53]. The findings indicate the importance of offering preventive and therapeutic intervention, to protect the residents from the impact of traumatic cases typical of both routine or crisis periods, such as the Covid pandemic.

8.3. Burnout among Residents Both in Covid and Routine Times

All the residents showed signs of burnout, which stemmed from two sources. The first was their daily routine, characterized by heavy workload, long work-hours, treating many patients per shift, and dealing with complicated medical cases. The second source of burnout was the Covid period and its specific difficulties. Responses to the questionnaires indicated burnout among ten participants. These findings join previous research in indicating burnout among residents [25] [54]. Studies have also reported that burnout develops already at the residency stage, as we saw in this study [25].

Burnout has serious implications for both the individual and the organization. It erodes workers' interest in their job, causing them to develop a cynical attitude toward their duties and patients. It also diminishes the quality of their performance, encourages absences, and hurts their well-being [16]. These effects may take their toll on the quality of care, for example when professional decisions are called for [55]. Other studies have indicated damage to workers' health and chronic burnout, which remain consistent overtime [51]. Studies have shown positive correlations between workload and burnout, and indicated the need to heal [54]. As the current study is qualitative, it did not examine correlations between variables, yet it reveals high levels of workload in routine periods and specific challenges during the pandemic, alongside high levels of burnout among most residents. The symptoms reported by the residents in our study are similar to those described in the literature.

Interestingly, the pediatric residents in this study reported reduced workloads during the pandemic. Despite that, the burnout level remained high. This finding may be explained by the pandemic-specific challenges reported by the participants, which created emotional and physical burden. Therefore, the reality of residents' work during the pandemic produced additional, burnout-inducing stressors, as reported in previous research [3].

Some discrepancies were found between the findings from the interviews and those from the questionnaires: in the former, all participants reported burnout symptoms, while in the latter, four residents were found not to have burnout symptoms. This gap can be due to the different methods used. The questionnaires focused on specific symptoms, possibly causing participants to worry about exposure; the interviews, on the other hand, were clinical in nature and produced open communication with the interviewer, which may have encouraged a more honest account. Despite these differences, the overall picture shows high levels of burnout among residents.

The research by d'Ettorre *et al.* shows that anxiety, passive coping, and burnout predict PTSD [53], joining other research in establishing a link between burnout and PTSD [32]. Together, these psychological expressions of distress among residents demand organizational intervention, as will be discussed below.

8.4. Being a Resident in the Periphery: The Cultural Aspect

From a cultural perspective, the current study examined how the residents perceived their work with the Arab-Bedouin inhabitants of the region, especially during the pandemic. Composing 20% of the region's population [13], the Bedouins are an important characteristic of Israel's southern periphery. The study presents the residents' perspective on working with this unique community and dealing with its special traits both in normal times and during the Covid outbreak.

The residents described the special nature of the medical cases they treated, which derive from the Bedouins' living circumstances. These medical cases included electrocution, rat bites, poisoning, and other injuries caused by animals,

cars, and fires. These findings can be accounted for by the living conditions of parts of the Bedouin population in southern Israel, especially those living in the Bedouin diaspora, a term referring to villages that are not recognized by the state and thus offer harsh living standards to their inhabitants. These living conditions expose Bedouin children to daily risks; as a result, healthcare providers encounter cases that are typical of this area [14] [56]. The residents in this study did not report cases of physical or mental disabilities, which are relatively common among the Bedouins because of intra-family marriage. This may be due to the general reduction in hospital visits caused by the pandemic or because such cases are usually handled by other wards.

Providing healthcare to Bedouin children was more complex during the pandemic, since the Bedouins were less inclined to use face masks and receive vaccination, and sometimes ignored the quarantine guidelines. According to some of the residents, Bedouin family members did not treat the pandemic seriously. They did not adhere to social distancing and concealed information, which caused some HCWs to feel at risk. This increased residents' tension and emotional burden during the pandemic, probably contributing to the sense of burnout.

8.5. Residents' Preparedness for Dealing with Stressors and Suggestions for Improvement

Most residents reported feeling inadequately prepared for dealing with traumatic events, reflecting a significant gap between theoretical learning and field experience. This seems to have made their encounter with traumatic situations more powerful. In addition, the work intensity prevented them from processing such situations, since they had to move quickly to the next case. Emotional processing and professional support are thus needed. It is important to keep in mind that physicians tend to avoid sharing difficulties, which enhances the need for systematic professional intervention [38]. Based on the findings, we thus propose ideas for improving response and providing support to the residents, some based on their own suggestions.

- Raising awareness among hospital authorities to the implications of the residents' work environment in routine and emergency times, enhancing their commitment to meet the residents' emotional and physical needs. Hospital leadership should be familiar with the sources of stress and difficulty; it should take active steps to identify residents at high risk for developing negative reactions to traumatic events, and design programs for prevention and treatment [7] [38]. The consistent findings in the literature about HCWs' psychological distress together with our findings about pediatric residents show the importance of involving hospital administrations in developing system-wide interventions [20].
- Developing channels of social support for physicians and specifically for residents. Low levels of such support have been found to correlate with higher PTSD risk, while social support has been found to moderate the effects of stressors on HCWs [53]. Thus, social support is a central factor in prevention

and treatment. This may include demonstration of interest, trust, and appreciation towards residents. Such attitudes may have a key role in supporting residents both in routine and emergency times, as indicated in previous research [3] [38]. In light of the interviews, it is also recommended to design activities to enhance the social ties within the medical teams.

- Designing a multi-channel intervention program that can be adjusted to residents' needs. For example, some of our interviewees reported that they feel uncomfortable sharing emotions in a group setting, indicating the need to find alternative routes to meet different needs and provide personal support when necessary. Below are some ideas for intervention programs.
  - Disseminating information to HCWs (through brochures, websites, etc.) about hospital regulations, workers' rights, tips on identifying distress, and ways of reaching out for help [18]. These channels of communicating information may also legitimize residents' hardships and encourage them to seek help.
  - Setting up a phone line or a 24/7 hotline for private consultation in cases of emotional distress [18].
  - Scheduling regular group sessions of peer support, to allow processing experiences on a regular basis. This will address residents' emotional needs and enhance their sense of belongingness. The sessions should be facilitated by professionals that will create a safe space for the residents.
  - Simulations are a frequently used tool in medical training for preparing staff to various scenarios [57]. Simulations can also be used to practice interactions with families, like responding to verbal aggression or delivering sad news. The simulations can be integrated into the academic or practical stages of the training and can be done face-to-face or online, if social distancing is in order [58].
  - Regularly scheduled dyadic meetings with a mentor. In other sectors, mentoring has been found to promote an individual's sense of being connected, competent, and autonomous (Self-Determination theory) [59]. Mentoring has also been reported to enhance well-being and meaningfulness [60]. A mentor can establish a supportive relationship with the resident, listen to his or her experiences, identify their needs, and think together about ways to meet them. Mentors should be specifically trained and acquire professional tools for meaningful dialogue with the residents (such as strengthening listening skills or developing empathy).
  - Developing prevention programs that focus on cultivating resilience and acquiring coping strategies, such as problem-solving, seeking help, or being proactive. It is also important to enhance internal resilience resources, which include acknowledging self-strength, identifying positive aspects of a situation, or practicing mindfulness [7] [61].
- Treating acute PTSD.
  - After handling traumatic cases, residents must be treated according to the principles of PTSD intervention. According to the literature, reactions in

the first 48 hours after the event form a natural stage termed Acute Stress Reaction. This stage does not require professional intervention and can be addressed via peer group discourse or dialogue with a meaningful figure (who will take interest by asking, e.g., "What has happened?" or "How do you feel?"). After 48 hours, the second stage of PTSD begins to develop and may last up to one month from the exposure. This stage is termed Acute Stress Disorder. PTSD can only be diagnosed when the symptoms last over a month from the exposure. At this point, treatment should follow the principles of PTSD intervention [26].

- Residents can be offered various short-term interventions that use PTSD-specific therapeutic techniques such as eye movement desensitization and reprocessing (EMDR) [18].
- During emergencies, such as the Covid outbreak, stress may be treated as an opportunity for posttraumatic growth. It has been established that successful coping with trauma increases resilience and improves coping with future crises [62]. Furthermore, traumatic events do not always have adverse effects, as some people deal with them well [61].
- The professional and administrative staff should be equipped to interpret the reactions of residents involved in traumatic events. This study demonstrates a clinical semi-structured interview that can be used to detect acute burnout or PTSD, where professional intervention is needed.

9. Research Limitations and Future Investigations

The study presented a rich picture of the experiences of residents, indicating the physical and psychological implications of their work during the Covid pandemic and in ordinary times. It was based on 14 interviews with pediatric residents. A future study may expand the research to additional specialties. It is also worth examining whether residents in different specialties experience different struggles, so that intervention can be adapted to each population.

This study did not examine the coping strategies of residents and the sources of resilience that helped in their coping. These aspects have been investigated previously with quantitative methods [61]. We recommend that they are also examined in a future qualitative study.

Participants' demographics and other background details were not tested for their role in the findings. Future research may examine differences between men and women, married and single participants, those with social support versus those that lack it, and interns versus residents. To do that, a larger sample is needed, to allow checking for sub-group distinctions.

We also recommend performing a follow-up study to examine the long-term effects of the experiences reported by the interviewees.

10. Conclusion

The current study provided an insight into the authentic experiences of pediatric

residents, both in ordinary times and during the Covid pandemic, when they served at the forefront of the fight against the disease. The study described various circles of pressures affecting the residents, including dealing with special medical cases typical of Israel's peripheral regions. It exposed the residents' psychological distress and indicated high rates of burnout and PTSD. As healthcare workers ourselves, we were not surprised by the emerging picture. Yet we thought it important to document it and present it to policymakers. We hope that this study contributes to improving the residency experience of young physicians and encourages the development of effective support mechanisms, so that residents are better able to cope with their daily work, as well as with future medical crises.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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