

Healthcare-Seeking Behavior in Times of Crisis: Emergency Department Patterns due to Low Back Pain following the 7 October 2023 Israel– Hamas War and COVID-19 Lockdown

Adi Lichtenstein MD*, Ben Efrima MD*, Yair Green-Halimi MD, Amit Benady MD PhD, Guy Ben Arie MD, Nissim Khaimov MD, and Assaf Albagli MD

Department of Orthopedics, Tel Aviv Sourasky Medical Center, Tel Aviv, Israel, affiliated with Gray Faculty of Medical and Health Sciences, Tel Aviv University, Tel Aviv, Israel

*These authors contributed equally to this study.

ABSTRACT **Background:** National crises can significantly impact healthcare utilization patterns yet analyses of different types of crises are limited. While the effects of the coronavirus disease 2019 (COVID-19) pandemic on emergency department (ED) utilization have been well-documented, the healthcare impact of the Israel– Hamas war, which began 7 October 2023, remains unexplored.

Objectives: To compare ED utilization patterns for non-traumatic low back pain (LBP) during two distinct national crises.

Methods: We conducted a retrospective observational study analyzing ED visits for non-traumatic LBP at our medical center. We compared ED utilization patterns, visual analog scale (VAS) pain scores, and surgical rates during 60 days before and after two distinct dates: 7 October 2023 and 19 March 2020 (the start of the COVID-19 lockdown). Statistical analysis included independent *t*-tests for continuous variables and chi-square tests for categorical variables.

Results: Following 7 October, ED visits decreased by 28.6% (504 to 360). Mean VAS scores and surgery rates showed a non-significant increase from 5.5 ± 2.6 to 5.8 ± 2.4 , and from 3.0% to 4.2%, respectively. During the COVID-19 lockdown, ED visits declined by 44.2%, with non-significant changes in pain scores (6.0 ± 3.0 to 5.5 ± 2.9) and surgical rates (3.5% to 2.5%).

Conclusions: Both events led to significant reductions in ED utilization for non-traumatic LBP, despite the heightened risk factors. Surgical rates remained stable, yet many symptomatic patients may have foregone adequate care. These findings underscore the need for resilient, crisis-specific emergency preparedness strategies to ensure continued access to care.

IMAJ 2026; 28: 416–420

KEY WORDS: coronavirus disease 2019 (COVID-19), crisis, emergency department (ED), low back pain (LBP), war

Understanding how national crises affect emergency department (ED) utilization is essential for healthcare system preparedness. Low back pain (LBP), one of the leading causes of disability worldwide, accounts for approximately 4.4% of ED visits and provides a useful model for evaluating changes in healthcare-seeking behavior during emergencies [1-3]. Although most LBP cases are non-specific and self-limiting, a small but clinically important proportion (0.7–4%) is associated with serious pathology requiring prompt recognition and management [4-6].

The coronavirus disease 2019 (COVID-19) pandemic resulted in a substantial global decline in ED visits, with reported reductions of 40–60%, largely attributed to infection concerns and lockdown measures [7,8]. In contrast, the Israel– Hamas war, which began on 7 October 2023, represents an acute national security crisis characterized by mass casualties and logistical disruption, yet with healthcare systems remaining operational [9-11]. Despite their fundamentally different nature, both crises amplified established risk factors for LBP, including physical inactivity, prolonged sedentary behavior, and psychological stress [12].

In this study, we compared ED utilization patterns for non-traumatic LBP during these two distinct national crises. We hypothesized that although the incidence of LBP may have increased due to crisis-related risk factors, ED presentation rates would decline, with potentially different effects on patients requiring urgent intervention. By comparing visit volumes, pain severity, and surgical rates before and during each crisis, we clarified how different emergencies shaped healthcare-seeking behavior and suggested future crisis-specific preparedness strategies.

PATIENTS AND METHODS

In this retrospective observational study, we analyzed ED visits to Tel Aviv Sourasky Medical Center in Israel, a single tertiary medical center. The study included patients admitted to the ED for non-traumatic LBP within 60 days before and after two significant events: the initial COVID-19 quarantine period of March 2020 (study period: 19 January to 19 May 2020) and the Israel–Hamas war that started on 7 October 2023 (study period: 7 August to 7 December 2023).

Ethics approval was obtained from the institutional review board, and all data were anonymized to ensure patient confidentiality. This study adheres to the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for observational research.

INCLUSION AND EXCLUSION CRITERIA

Patients aged 18 years or older presenting with non-traumatic LBP were included in the study. Exclusion criteria included patients with incomplete or missing medical records and those presenting with traumatic causes of LBP.

DATA COLLECTION

We reviewed the records of patients who presented to the ED during the study period, identifying cases of non-traumatic LBP by searching for relevant keywords including common variants, misspellings, and terminology related to LBP in both English and Hebrew, which also included the International Classification of Diseases (ICD) code. Data were extracted from all electronic medical records generated during the ED visits. Each chart was initially reviewed by one physician to ensure the inclusion criteria were met and to collect relevant data. In cases of discrepancy, the chart was further evaluated by two additional physicians to reach a consensus. Patient demographic including, socioeconomic status (SES), date of visit, and visual analog scale (VAS) pain scores were included. We also noted whether a surgical procedure was performed within 30 days post-ED admission.

DATA COMPARISON AND ANALYSIS

Patients were divided into four groups based on their admission dates. The pre-quarantine group included patients admitted between 19 January and 18 March 2020, while the post-quarantine group comprised those admitted between 19 March and 19 May 2020. Similarly, the pre-October 7th group included patients admitted between 7 August and 6 October 2023, and the post-October 7th group included patients admitted between 7 Oc-

tober and 7 December 2023. Statistical comparisons were subsequently performed between these groups to identify differences or trends.

STATISTICAL ANALYSIS

Shapiro-Wilk test was used to evaluate the normal distribution of the data. Normally distributed data are presented as mean $\pm$ standard deviation. Abnormally distributed data are presented with median and interquartile range (IQR). Comparison of continuous data between the groups was made using a two-sided paired sample *t*-test for the normally distributed data and a related sample Wilcoxon signed rank test for the not normally distributed data. Chi square was used to compare categorical data. Results were reported with *P*-values and 95% confidence intervals (95% CIs), with significance set at $P < 0.05$.

RESULTS

Demographic characteristics remained consistent across all study periods. The mean age showed no significant differences between the pre- and post-COVID groups (51.77 vs. 53.94 years, $P = 0.179$) or between the pre- and post-October groups (50.56 vs. 50.32 years, $P = 0.857$). Sex distribution was also stable, with the proportion of male patients (with the reverse for female) showing no significant changes between the pre- and post-COVID groups (53.02% vs. 47.92%, $P = 0.227$) or the pre- and post-October groups (52.78% vs. 55.0%, $P = 0.534$).

Clinical characteristics, including the mean VAS scores, showed slight changes but did not reach statistical significance. VAS scores decreased marginally post-COVID (5.96 vs. 5.48, $P = 0.076$) and increased slightly post-October 7th (5.5 vs. 5.81, $P = 0.085$). SES clusters also remained consistent across all periods ($P = 0.813$ for COVID and $P = 0.633$ for October 7th).

Surgical intervention rates showed non-significant changes, across the pre- and post-COVID groups (3.49% vs. 2.5%, $P = 0.645$) and the pre- and post-October 7th groups (2.98% vs. 4.17%, $P = 0.353$). Admission rates also remained stable, with non-significant differences between the pre- and post-COVID groups (2.56% vs. 2.5%, $P = 1.0$) or the pre- and post-October 7th groups (6.35% vs. 6.11%, $P = 1.0$).

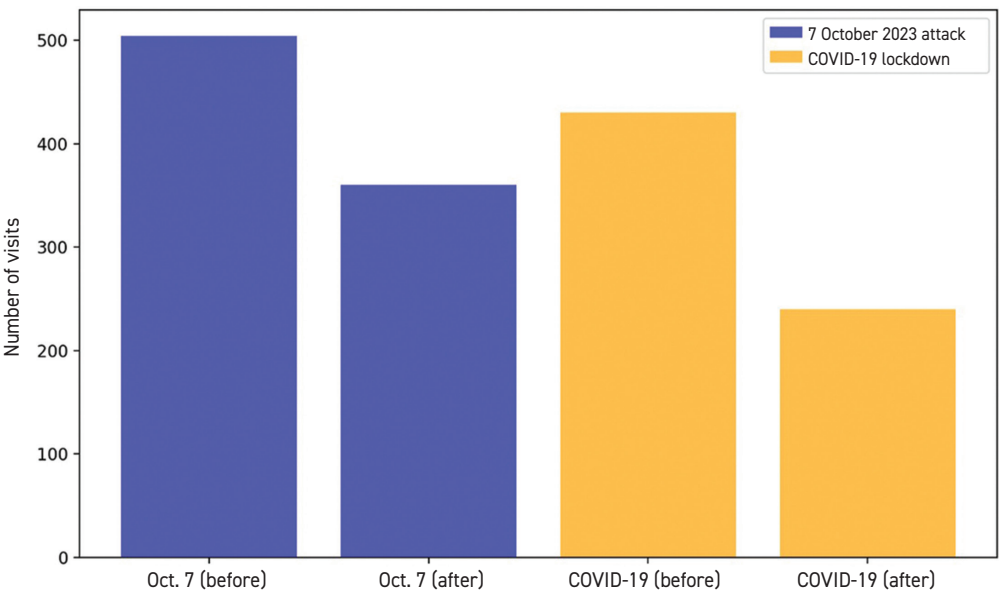
Notably, there was a significant reduction in ED visit volumes in the post-event periods for both crises. ED visits decreased by 44.2% post-COVID (430 to 240 visits, $P < 0.001$) and by 28.6% post-October 7th (504 to 360 visits, $P < 0.001$), highlighting a significant decline in patient presentations during these periods [Table 1, Figure 1].

Table 1. Comparison of demographic and clinical characteristics across pre- and post-COVID and 7 October 2023 (Israel– Hamas war) periods with statistical significance

	Pre-COVID-19	Post-COVID-19	P-value	Pre-October 7th	Post-October 7th	P-value
Mean age in years	51.77	53.94	0.179	50.56	50.32	0.857
Mean VAS	5.96	5.48	0.076	5.5	5.81	0.085
Mean SES cluster	12.88	12.79	0.813	13.07	12.91	0.633
Surgery rate, n (%)	3.49 (15)	2.5 (6)	0.645	2.98 (15)	4.17 (15)	0.353
Number of visits	430	240, 44.2% decrease	< 0.001	504	360, 28.6% decrease	< 0.001
Males, n (%)	53.02	47.92	0.227	52.78	55.0	0.534
Admission rate, n (%)	2.56 (11)	2.5 (6)	1.0	6.35 (32)	6.11 (21)	1.0

COVID-19 = coronavirus disease 2019, SES = socioeconomic status, VAS = visual analog scale

Figure 1. Emergency department visit volumes before and after crises



DISCUSSION

The principal finding of this study is a marked reduction in ED visits for non-traumatic low LBP during two major national crises: the COVID-19 lockdown and the Israel– Hamas war, which started 7 October 2023. ED visits declined by 44.2% during the COVID-19 quarantine and by 28.6% following 7 October, compared with their respective pre-event periods. Despite these reductions, patient demographics, pain severity (VAS), SES, admission rates, and surgical intervention rates remained largely unchanged.

The reduction in ED utilization during the COVID-19 pandemic has been well documented. Prior studies report-

ed decreases of 40–60% in ED visits, largely attributed to fear of infection and compliance with lockdown measures [8,13]. Our findings align with international reports, with Israeli data demonstrating substantial declines in ED attendance during early pandemic phases [14–16]. Importantly, our study extends existing literature by comparing the pandemic with a fundamentally different crisis—a military conflict—within the same healthcare system.

The Israel– Hamas war represents an acute national emergency characterized by security threats, mass casualties, and logistical disruptions. Unlike the prolonged restrictions of the pandemic, the war posed immediate safety concerns while healthcare facilities remained operational. The observed reduction in ED visits for LBP during this

period suggests that patient healthcare-seeking behavior is consistently altered during national crises, regardless of the source. However, the smaller reduction observed during the war compared with COVID-19 may reflect differences in public perception, healthcare accessibility, and trust in the medical system during armed conflict [17].

Both crises established risk factors for LBP, including reduced physical activity, prolonged sedentary behavior, heightened stress levels, and lifestyle changes [12]. Under such circumstances, a theoretical increase in LBP incidence would be expected. Contrary to this expectation, 434 fewer patients presented to the ED for LBP during the crisis periods, suggesting that a substantial proportion of symptomatic individuals likely avoided or deferred ED care.

Notably, surgical intervention rates remained stable across both crises. During the COVID-19 period, a non-significant reduction in absolute surgery numbers was observed, raising concern that some patients with serious pathology may not have sought timely care. Similar trends of delayed treatment for urgent conditions during the pandemic have been reported elsewhere [18]. In contrast, during the Israel–Hamas war, surgical rates were maintained, suggesting that patients with more severe spine conditions continued to access emergency care, while reductions were primarily driven by patients with milder symptoms. These findings highlight the vulnerability of traditional healthcare delivery models during large-scale crises.

The rapid expansion of telemedicine during the COVID-19 pandemic demonstrated the potential of remote care to maintain access when in-person visits are limited. For patients with LBP, remote assessment and telerehabilitation have been shown to support pain management, functional improvement, and appropriate referral of high-risk cases, thereby reducing unnecessary emergency department visits while preserving patient safety [19]. In parallel, emerging artificial intelligence-based tools may further support risk stratification, symptom monitoring, and clinical decision-making during periods of healthcare disruption [20].

LIMITATIONS AND STRENGTHS

This study was limited by its retrospective design and single-center setting, which may affect generalizability. The relatively low number of hospitalizations and surgical interventions limited statistical power for some comparisons. In addition, the distinct nature and timelines of the two crises complicate direct comparison. However, the study's strengths include rigorous case identification

based on documented ED complaints, minimizing misclassification, and the unique comparison of two national crises within the same healthcare system.

CONCLUSIONS

National crises are associated with substantial reductions in ED visits for non-traumatic LBP, despite the presence of multiple exacerbating risk factors. While access to urgent surgical care was largely preserved, many symptomatic patients likely did not receive timely evaluation. These findings underscore the importance of developing resilient healthcare strategies and incorporating telemedicine and digital tools to ensure continuity of care during future emergencies.

Correspondence

Dr. G. Ben Arie

Dept. of Orthopedics, Tel Aviv Sourasky Medical Center, Tel Aviv 6423906, Israel

Email: guybenarie@gmail.com

References

1. Edwards J, Hayden J, Asbridge M, Gregoire B, Magee K. Prevalence of low back pain in emergency settings: a systematic review and meta-analysis. *BMC Musculoskelet Disord* 2017; 18 (1): 143.
2. Hoy D, March L, Brooks P, et al. The global burden of low back pain: estimates from the Global Burden of Disease 2010 study. *Ann Rheum Dis* 2014; 73 (6): 968-74.
3. Buchbinder R, van Tulder M, Öberg B, et al. Low back pain: a call for action. *Lancet* 2018; 391 (10137): 2384-8.
4. Hoy D, Bain C, Williams G, et al. A systematic review of the global prevalence of low back pain. *Arthritis Rheum* 2012; 64 (6): 2028-37.
5. Koes BW, van Tulder M, Lin CW, Macedo LG, McAuley J, Maher C. An updated overview of clinical guidelines for the management of non-specific low back pain in primary care. *Eur Spine J* 2010; 19 (12): 2075-94.
6. Galliker G, Scherer DE, Trippolini MA, Rasmussen-Barr E, LoMartire R, Wertli MM. Low back pain in the emergency department: prevalence of serious spinal pathologies and diagnostic accuracy of red flags. *Am J Med* 2020; 133 (1): 60-72.e14.
7. WHO Director-General's opening remarks at the media briefing on COVID-19 – 11 March 2020 [Available from <https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-COVID-19---11-March-2020>]. [cited 2020 Nov 13].
8. Hartnett KP, Kite-Powell A, DeVies J, et al; National Syndromic Surveillance Program Community of Practice. Impact of the COVID-19 pandemic on emergency department visits - United States, January 1, 2019-May 30, 2020. *MMWR Morb Mortal Wkly Rep* 2020; 69 (23): 699-704.
9. Codish S, Frenkel A, Klein M, Gefitler A, Dreier J, Schwarzfuchs D. October 7th 2023 attacks in Israel: frontline experience of a single tertiary center. *Intensive Care Med* 2024; 50 (2): 308-10.
10. Goldman S, Lipsky AM, Radimislensky I, et al. October 7th mass casualty attack in Israel: injury profiles of hospitalized casualties. *Ann Surg Open* 2024; 5 (3): e481.

11. Gozlan A, Abuhasira R, Dreier J, et al. October 7th 2023 mass casualty incident in southern Israel: lessons for emergency preparedness and management. *Isr J Health Policy Res* 2024; 13 (1): 67.
12. Shiri R, Coggon D, Falah-Hassani K. Exercise for the prevention of low back pain: systematic review and meta-analysis of controlled trials. *Am J Epidemiol* 2018 01; 187 (5): 1093-101.
13. Solomon MD, McNulty EJ, Rana JS, et al. The Covid-19 pandemic and the incidence of acute myocardial infarction. *N Engl J Med* 2020; 383 (7): 691-3.
14. Basis F, Zeidani H, Hussein K, Hareli S. Drastic reduction inpatient visits to the emergency department in a hospital in Israel during the COVID-19 outbreak, compared to the H1N1 2009. *Int J Health Policy Manag* 2022; 11 (4): 429-33.
15. Cofano F, Tartara F, Zenga F, Penner F, Lanotte M, Garbossa D. Letter: back pain and accesses to emergency departments during COVID-19 lockdown in Italy. *Neurosurgery* 2020 01; 87 (2): E211.
16. Borsa S, Pluderi M, Carrabba G, et al. Letter to the editor: impact of COVID-19 outbreak on acute low back pain. *World Neurosurg* 2020; 139: 749.
17. Brazg Ferro L, Corn BW, Goldzweig G, Sultan M, Shekel E, Sapir E. Radiation therapy delivery during the 2023 Israel-Hamas war: trust prevails over fear. *Adv Radiat Oncol* 2024; 9 (7): 101514.
18. Holmes JL, Brake S, Docherty M, Lilford R, Watson S. Emergency ambulance services for heart attack and stroke during UK's COVID-19 lockdown. *Lancet* 2020; 395 (10237): e93-4.
19. Werneke MW, Deutscher D, Hayes D, Grigsby D, Mioduski JE, Resnik LJ. Is telerehabilitation a viable option for people with low back pain? Associations between telerehabilitation and outcomes during the COVID-19 pandemic. *Phys Ther* 2022; 102 (5): pzac020.
20. Topol EJ. High-performance medicine: the convergence of human and artificial intelligence. *Nat Med* 2019; 25 (1): 44-56.

Capsule

Cytosolic CTH senses bacterial lipoproteins and drives noncanonical inflammasome activation

Liu et al. identified a previously unrecognized innate immune sensing mechanism involving the cytosolic protein CTH. The study showed that CTH directly detects bacterial lipoproteins that gain access to the cytoplasm during infection. On recognition of these bacterial molecules, CTH initiated activation of the noncanonical inflammasome pathway, resulting in inflammatory cytokine production and induction of antimicrobial host defenses. Loss of CTH impaired

inflammasome activation and reduced the host's ability to control bacterial infection. These findings reveal a novel intracellular surveillance pathway that broadens the understanding of how the innate immune system recognizes bacterial pathogens. The work also highlights potential therapeutic targets for inflammatory diseases and severe bacterial infections.

Nat Immunol 2026; 27 (6): 1159
Eitan Israeli

Capsule

Current status of vaccine development for five curable bacterial STIs

Rodrigues Gomes et al. presented a comprehensive evaluation of the current status and scenario of vaccine development against these bacterial STI pathogens. For *Chlamydia trachomatis*, protein subunit vaccines targeting major outer membrane proteins have shown immunogenicity in early clinical trials. *Neisseria gonorrhoeae*, with its high antigenic variability and immune evasion, poses a significant challenge to vaccine design, but cross-protection observed with meningococcal outer membrane vesicle vaccines is encouraging. Its culturability and immune evasion mechanisms limit research on *Treponema pallidum*, but bioinformatic strategies have identified novel multi-epitope vaccine candidates. Vaccine development against *Haemophilus ducreyi* and *Mycoplasma genitalium* is just at

the beginning. Rising antimicrobial resistance, especially in *Neisseria gonorrhoeae* and *Mycoplasma genitalium*, underscores the urgency of vaccine-based interventions. The integration of in silico methods such as reverse vaccinology, structural biology, and immunoinformatics is accelerating the identification and discovery of vaccine candidates. Still, significant challenges persist, including antigen variability, immune escape, and limited funding. A coordinated global strategy combining vaccine development, antimicrobial resistance surveillance, and unbiased distribution is essential to reduce the burden of bacterial STIs and secure long-term disease control.

Drug Development and Pharmacotherapy 2026, doi:10.20935/AcadDrug8297
Eitan Israeli