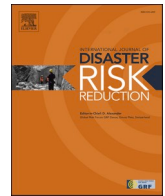




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## A neglected issue in hospital emergency and disaster planning: Non-standard employment in hospitals

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### ABSTRACT

Work organization and relationships have changed over recent decades. Following the recent COVID-19 pandemic, the norms concerning work-related standards will likely change even more significantly. There has been a shift away from standard employment to non-standard employment (NSE), which includes fixed-term, part-time, on-call, agency-related employment, dependent self-employment, dispatch, and temporary employment, etc. In nearly every sector. The health sector is no exception. However, the effects of non-standard employment on the disaster preparedness of health systems, particularly on hospitals' emergency and disaster plans, have not yet been adequately studied. Most crucial themes are engagement of non-standard employees in emergency and disaster planning and response, and the impact of non-standard employees in expanding hospitals' capacity in large-scale events. This short communication paper aims to discuss this neglected issue in hospital emergency and disaster planning.

In order to see whether NSE is considered in hospital disaster and emergency plans, two hospital disaster and emergency planning guidelines—the Hospital Incident Command System, and the Hospital Emergency Response Checklist developed by the World Health Organization—were assessed regarding NSE in their respective contexts. Although these guidelines are comprehensive tools for hospital preparedness, NSE is not specifically considered in any of them. However, it is essential that NSE, with its trade-offs, is considered in disaster plans to maintain an effective implementation of them. Further research and actions are necessary, especially after the COVID-19 pandemic, to identify how this reflection should be conducted and to supply evidence for further measures and revising emergency and disaster planning guidelines.

### 1. Introduction

Globally more than 59.2 million health workers are working for improving the health of populations. WHO defines health workers as “all people engaged in actions whose primary intent is to enhance health” [1, 2]. In another document of WHO health workers were defined in broader terms as “all workers in the health services, public health and in related areas, and workers who provide support to these activities” [3]. Even though, International Standard Classification of Occupations (ISCO), which classifies health work force as “health service providers” and “health management and support workers”, is used in many countries, many ministries of health uses their own classification systems, as the breakdown provided by ISCO for health workers is not very detailed. Health service providers comprises the people who deliver services, such

as physicians, nurses, midwives, laboratory technician etc. Health service providers account for 67% of all health workers globally. Health management and support workers covers people who are not engaged in the direct provision of services, such as administrative professionals, computing professionals, clerical workers, drivers etc. [1]. Of the healthworkers, some are working in hospitals in diverse job categories, positions and employment status. Employment status is usually classified as standard and non-standard forms of employment (NSE). NSE is generally defined based upon its differences from standard employment, which is considered as full-time and permanent work with a contract between the worker and employer [1]. NSE includes fixed-term, part-time, on-call, agency-related employment, dependent self-employment, dispatch, and temporary employment [4,5]. Standard employment has been evolving into non-standard employment (NSE) in nearly every

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sector [4,6] for example in Australia NSE share (%) of the workforce between 1988 and 2000 had changed from 36% to 47% [7]. There is no data available at global level for reporting on NSE in health sector [1], but some studies in different countries showed that non-standard forms of employment, such as part time employment, in the health sector are also increasing, despite their challenging characteristics as a vital part of the sector [7–11]. For example, in Australia, even in late 90's nonstandard employees accounted for 82% of the workforce of the private hospitals in Australia, while public hospitals had a much lower proportion of nonstandard employees (18%) [12]. . NSE has been considered to have a positive impact on economic growth, but it is also often referred to as precarious employment due to potential adverse consequences regarding the health and well-being of workers [13]. NSE can have a variety of effects depending on the type of work arrangement, the individual employee profile, and the context of the workplace, sector, and country. There are few studies assessing the impacts of NSE in the health sector. According to these studies part time working, which is a form of NSE, affected many aspects of the health sector. These effects were either positive or negative, such as increasing the productivity, hence contributing to the quality of services [14], or achieving higher patient outcomes in preventive services such as cancer screening or diabetic management [15], and adverse implications for the workforce such as more negative perceptions regarding workplace (less autonomy, fewer opportunities for self-development) and less favorable work attitudes (less engagement, job involvement, and affective commitment [16], or on the contrary better psychological well-being and more satisfaction[17]; these effects have been increasingly discussed globally in many studies. However, there are many other negative and positive consequences of NSE for communities, organizations, institutions, and individuals, which should be discussed and considered. Specifically, the impacts of NSE on the disaster preparedness of health systems, particularly on hospitals' emergency and disaster plans, have not been adequately studied thus far. NSE-related data and the potential influences of its procedures also need to be evaluated both during and after the pandemic to gain knowledge and learn lessons for better planning and preparedness for future events. Considering that the number of people affected by disasters and the estimated damage caused by them has risen since the middle of the twentieth century [18], hospitals should be better prepared to face emergencies and disasters and overcome various challenges during this process. Appraising the condition and status of employees is important during the preparedness process. Inclusiveness of workforce, evaluation of needs, and keeping all capacities active and effective through a comprehensive occupational health and safety approach will empower the workforce in the health sector, which has a vital function during normal times as well as disasters. Thus, this short communication paper identifies and discusses the neglected issue of NSE in hospital emergency and disaster planning to point out a further research need.

All sorts of natural and technological hazards and complex emergencies have direct or indirect effects on human health and well-being. The recent pandemic has indicated once again that health systems have a vital role in responding to these disasters, and hospitals are among the primary components of health systems. The impacts of disasters on the health systems include unexpectedly high numbers of deaths, injuries, or illnesses in the affected community; destruction of local health infrastructure and routine health services; effects on the environment leading to the danger of communicable diseases and food shortages; mental health problems; and spontaneous or organized population movements [19]. Hospitals differ from other workplaces in many ways, especially in the context of disasters due the impact of disasters on the health systems. Health services should continue functioning after disasters due to the vital functions they perform, and in many cases, they must increase their capacity to respond to casualties. However, they can face structural and non-structural damages due to various hazards, and, consequently, health services may be affected when they are most in need. Health workers themselves and families can be also effected For example, more

than 11,000 health facilities were damaged or destroyed by the earthquake that struck China on May 12, 2008. Approximately 432 health facilities were damaged by Typhoon Haiyan in the Philippines in 2013 [20]. More than 6400 patients from six hospitals and 31 residential care facilities in New York were evacuated during the Hurricane Sandy in 2012. One of these hospitals were closed for two months, and went without an emergency room for a year and a half [21] In addition to hospitals' lifesaving and health-protecting roles, any destruction of the health infrastructure and routine health services have adverse economic and social impacts on communities. Hospitals are huge investments for communities. Hospitals can absorb up to 70% of the budgets of the ministry of health, and they are important symbols of social well-being. Any destruction or damage to hospitals may lead to severe social consequences, such as the loss of trust in local authorities and exposing patients and health workers to further vulnerabilities [20].

Thus, hospitals require special attention in the disaster preparedness of communities. Several actions should be implemented to help hospitals become resilient to hazards and function during/after disasters. The establishment of hospital emergency and disaster plans is among these actions. However, developing preparedness at the individual, institutional, or communal level is always a challenging issue [19,22]. Many factors, such as limited resources, lack of political will, and deficiency in communal/institutional/individual support or awareness, have an impact on health systems and hospitals. Many of these challenges have been acknowledged and discussed [23]. In addition to these commonly discussed factors, changes in the work relationships of NSE might complicate the challenges of making hospitals resilient to hazards and prepared for disasters, if they are not considered during the preparedness process.

NSE in hospitals has been common among healthcare personnel as well as other personnel [6–11]. Further, hospitals have many types of NSE, especially in non-medical areas, such as office work, cleaning, catering, and technical support.

All personnel in hospitals, medical and non-medical, should be involved in disaster planning. Typically, attention is given to medical staff; however, ancillary and management staff members are also essential for hospitals to function [24].

Disaster planning demands time, motivation, involvement, and resources. However, for personnel with non-standard forms of employment, investing time, being motivated, and having resources for this "extra" duty might require more effort compared to those who have standard employment arrangements. Participating in disaster training and drills, which usually target personnel with standard employment arrangements, might not be a smooth process for those with irregular working conditions. Conversely, disaster planning could be a compelling task if training and drills are organized, considering NSE as well. Studies have shown that the disaster exercise and educational process had the greatest benefit for individuals and departments involved directly [25]. Similarly, NSE might not be aware of announcements regarding plans and revisions in the plans, if specific arrangements for NSE were not in place. A sense of belonging and internalization of organizational culture are important determinants for establishing a stronger sense of ownership of the hospital emergency and disaster plans [26] as well as safety culture [27,28]. According to the International Labor Organization (ILO), due to their eventual limited temporal, physical, or administrative attachment to organizations, non-standard workers are assumed to have weaker attachments and lower commitments to their organizations [4]. Similarly, another study suggested that institutional involvement or engagement of part-time working medical personnel might be on the margins [8]. A striking example from Japan demonstrated that, on day 4, after the Great East Japan Earthquake, followed by the Fukushima Daiichi nuclear power plant accident, hospital directors announced that hospital employees could evacuate if they wished. Some staff members and all temporary workers, responsible for office work, cleaning, and meals, were evacuated. The remaining medical staff had to fill these roles [29].

In the literature, full-time vs. part-time job status was among the determinants of Canadian nurses' perceptions of preparedness of hospitals [30]. Outsourcing cleaning duties increase the likelihood of the unintended incidence of healthcare-associated infections, as these workers are usually under-rewarded, undertrained, and detached from the organization and the rest of the care team [31].

Thus far, literature has focused primarily on the negative aspects of non-standard employment in the context of disasters. Nevertheless, considering that during the recent pandemic, many countries' health systems increased their capacity with non-standard employees, new evidence or arguments might emerge regarding the contributions of non-standard employment to better planning for disasters and response to them.

Due to the irregular working conditions of non-standard personnel, such as working hours, at home working or holding multiple jobs, it might be a trade-off to assign them to critical positions in the emergency and disaster plans. This might end with allocating personnel ineffectively and inefficiently. During large scale emergencies and disasters, all existing human resources are critical, even those who are not working at the hospitals, such as general practitioners (GPs) and volunteers, and they should be linked with plans [32]. Working in emergencies and disasters requires some flexibility and adaptation. For example, many health care providers who worked during hurricanes Katrina and Rita reported that they were employed in unusual roles or were asked to work with populations, such as pediatrics or geriatrics, to which they were not accustomed [33]. Similar examples were experienced during the COVID-19 pandemic [34]. On the one hand, personnel with non-standard employment arrangements might have a high sense of adaptation because they use it during their usual working days. On the other hand, they might have less contact with other personnel in the hospital or be less familiar with the structural or functional aspects of the hospital. For example, during the recent COVID -19 pandemic, many healthcare workers were infected [35,36], but there is no precise information about the employment status (standard or non-standard) of the infected healthcare workers. Eventually, non-standard conditions and working styles become common in many health services due to the insufficient capacity to respond, such as during a pandemic. Information about the employment status and working conditions of infected health workers might enlighten further arrangement needs considering NSE in disaster planning. ILO document on decent work [37] might be a starting point for this issue. Furthermore, working under stress and during crises might lead to mental health problems; this is particularly true for health workers [38], and overseeing various working statuses and conditions of the personnel in disaster plans would increase this possibility.

## 2. Non-standard employment in the context of hospital disaster and emergency plans

In order to see whether NSE is considered in hospital disaster and emergency plans, two hospital disaster and emergency planning guidelines were assessed regarding their coverage and management of the issue "non-standard employment." These were the Hospital Incident Command System (HICS), which is an emergency response and preparedness system for hospitals in the United States [39], and the Hospital Emergency Response Checklist developed by the World Health Organization (WHO) Regional Office for Europe [40]. These two guidelines were chosen as they represent a comprehensive content for all type of hospitals, are widely used internationally [41–43].

In the HICS, it was mentioned that it is important to ensure that all employees and medical staff receive training and understand their role (s) and responsibilities for an incidence response. Repeated meetings and training were suggested to ensure the involvement of all personnel in the process and planning. Calling additional staff and staff shift changes were considered and described in the guideline. However, volunteers and external support teams were identified for special

consideration in engaging and linking them to planning and training. There was no specific statement about personnel with non-standard employment arrangements in any part of the guideline.

The Hospital Emergency Response Checklist, as the name suggests, is a checklist rather than a guideline. It encompasses the essential actions to be taken for a prepared hospital. Briefing hospital staff on their roles and responsibilities, identifying methods of expanding hospital inpatient capacity, and recruiting and training additional staff (e.g., retired staff, reserve military personnel, university affiliates, students, and volunteers) were described among key components. However, there was no specific statement about personnel with non-standard employment arrangements in any part of the checklist.

In addition to these two internationally used guidelines, we checked a national guideline. The Hospital Disaster and Emergency Planning Guideline developed by the Turkish Ministry of Health [41], which covers actions of pre-disaster phases as well as response and recovery, did not differ much in considering personnel with non-standard employment arrangements. It was clearly mentioned that all personnel should be engaged in the planning process. The action plans clearly described the calling of the staff and managing the volunteers. Although standard operation procedures of management of human resources were sufficiently studied, similar to the above examples, there was no specific statement about personnel with non-standard employment arrangements in any part of the guideline.

## 3. Discussion and suggestions

Non-standard employment is becoming more common in the health sector and hospitals. Its impact on health systems and the service they provide, and on personnel, has been increasingly discussed globally. The effects of non-standard employment go beyond these issues, as health systems play a vital role in the daily life of communities as well as during crises triggered by natural or human-made hazards. However, there is not much evidence about it yet. Future research should focus on the impact of NSE on the disaster preparedness of health systems, particularly on hospitals' emergency and disaster plans. Then the challenges and benefits of NSE could be better reflected on emergency and disaster planning. Such research should be one of the next common goals of researchers on occupational health and safety and disaster management disciplines. Among others starting questions might be; (i) whether NSE decreases the engagement of these staff in emergency and disaster planning and response? (ii) Whether non-standard employees with relevant training might be useful and effective in expanding hospitals' capacity or ensuring their capability to operate for extended periods or large-scale events? Findings about these questions would supply evidence for further measures and revising emergency and disaster planning guidelines.

The assessed guidelines are comprehensive tools for hospital preparedness; however, the "new" shift in employment relations to non-standard employment is not specifically considered in any of them. It is clear that when the guidelines state "all personnel," this term also encompasses personnel with non-standard employment arrangements, but the engagement of personnel in emergency and disaster planning is a challenging task. Further, it can be more difficult to maintain the involvement of personnel with non-standard employment arrangements, as they might show less institutional involvement or engagement compared with personnel having standard employment arrangements. Thus, special consideration should be given to this issue. Many factors, such as whether NSE was a voluntary choice of the individual, the types of tasks, or the nature of employment arrangements, would have an impact on this topic. However, overlooking the issue could have adverse effects on the preparedness of hospitals and their response capacity and capability.

Additionally, excessive home-work interface requirements of health workers and related solutions need to be evaluated, for example, in the recent pandemic situation. These studies will illuminate non-standard



conditions to be considered in future preparedness and response plans.

Using telehealth or medicine to carry on some services that would be necessary during disasters might be just one of these solutions. There is no evidence yet on these positive or negative potential effects.

After responding to disasters, emergency and disaster plans of the relevant sector or institution and the guidelines that these plans were based on are revised considering the lessons learned and needs. Considering the COVID-19 pandemic, now is the ideal time to start collecting data and producing evidence for revising plans and guidelines; in this endeavor, NSE should be one of the primary topics.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### References

- [1] World Health Organization, Chapter 6: Health Workers in the World Health Report 2006 - Working Together for Health, WHO, 2006 available at, [https://www.who.int/whr/2006/06\\_chap1\\_en.pdf](https://www.who.int/whr/2006/06_chap1_en.pdf). (Accessed 13 August 2020).
- [2] <https://www.euro.who.int/en/health-topics/Health-systems/health-workforce/data-and-statistics>. (Accessed 13 August 2020).
- [3] [https://www.euro.who.int/\\_data/assets/pdf\\_file/0017/412190/TheNationalHealthWorkforceAccounts-a-factsheet.pdf](https://www.euro.who.int/_data/assets/pdf_file/0017/412190/TheNationalHealthWorkforceAccounts-a-factsheet.pdf). (Accessed 13 August 2020).
- [4] International Labour Office, Non-standard Employment Around the World: Understanding Challenges, Shaping Prospects, ILO, Geneva, 2016.
- [5] J. Ahn, N. Kim, B.K. Lee, J. Park, Y. Kim, Non-standard workers have poorer physical and mental health than standard workers, *J. Occup. Environ. Med.* 61 (10) (2019) 413–421.
- [6] L. Hipp, J. Bernhardt, J. Allmendinger, Institutions and the prevalence of nonstandard employment *Socio-Economic Review* 13 (2) (2015) 351–377, <https://doi.org/10.1093/ser/mwv002>.
- [7] A. de Ruyter, Casual and temporary employment in NSW regional hospitals, in: P. Stanton, E. Willis, S. Young (Eds.), *Workplace Reform in the Healthcare Industry*, Palgrave Macmillan, London, 2005.
- [8] E. Kirby, A. Broom, D. Karikiros, R. Harrup, Z. Lwin, Exploring the impact and experience of fractional work in medicine: a qualitative study of medical oncologists in Australia, *BMJ Open* 9 (2019), e032585, <https://doi.org/10.1136/bmjopen-2019-032585>.
- [9] S. Menashe, M.T. Parisi, T. Chapman, A.L. Stanesco, J.N. Wright, R.K. Otto, R. S. Iyer, Part-time pediatric radiology: the realities and perceptions of part-time employment in the academic setting, *Am. J. Roentgenol.* 211 (2018) 971–977.
- [10] G. Filler, L. Givelichian, W. Herve, B. Piedboeuf, Rising part-time work in the academic pediatric workforce in Canada, *J. Pediatr.* 163 (2) (2013) 312–313.
- [11] A. de Ruyter, Casual work in nursing and other clinical professions: evidence from Australia, *J. Nurs. Manag.* 12 (2004) 62–68.
- [12] C. Allan, *Labour Utilisation in Queensland Hospitals*, PhD Thesis, Griffith University, Brisbane, 1996.
- [13] B. Kreshpaj, C. Orellana, B. Burström, L. Davis, T. Hemmingsson, G. Johansson, K. Kjellberg, J. Jonsson, D.H. Wegman, T. Bodin, What is precarious employment? A systematic review of definitions and operationalizations from quantitative and qualitative studies, *Scand. J. Work. Environ. Health* (2020), <https://doi.org/10.5271/sjweh.3875>.
- [14] D. Fairchild, K. McLoughlin, S. Gharib, J. Horsky, M. Portnow, J. Richter, N. Gagliano, D.W. Bates, Productivity, quality, and patient satisfaction: comparison of part-time and full-time primary care physicians, *J. Gen. Intern. Med.* 16 (2001) 663–667.
- [15] P. Parkerton, E. Wagner, D. Smith, H. Straley, Effect of part-time practice on patient outcomes, *J. Gen. Intern. Med.* 18 (2003) 717–724.
- [16] R.J. Burke, S.L. Dolan, L. Fiksenbaum, Part-time versus full-time work: an empirical evidence-based case of nurses in Spain, in: *Evidence-based HRM: A Global Forum for Empirical Scholarship*, vol. 2, Emerald Group Publishing, October 2014, pp. 176–191, 2.
- [17] H.F. Mechaber, R.B. Levine, L.B. Manwell, M.P. Mundt, M. Linzer, Part-time physicians. Prevalent, connected, and satisfied, *J. Gen. Intern. Med.* 23 (2008), 1525–1497.
- [18] Centre for Research on the Epidemiology of Disasters (CRED) and UN Office for Disaster Risk Reduction (UNISDR). *Economic Losses, Poverty and Disasters 1998–2017, 2018*. Available at: [https://www.unisdr.org/files/61119\\_credeconomiclosses.pdf](https://www.unisdr.org/files/61119_credeconomiclosses.pdf). (Accessed 1 December 2018).
- [19] S. Tekeli Yeşil, Public health and natural disasters: disaster preparedness and response in health systems, *J. Publ. Health* 14 (2006) 317–324.
- [20] WHO, *Comprehensive Safe Hospital Framework*. Geneva: Safe Hospitals Initiative, WHO, 2015. Available at: <https://www.who.int/publications-detail/comprehensive-safe-hospital-framework>. (Accessed 1 February 2020).
- [21] N. Seltenrich, Safe from the storm: creating climate-resilient health care facilities, *Environ. Health Perspect.* 126 (10) (2018).
- [22] S. Tekeli Yeşil, N. Dedeoğlu, C. Braun-Fahrlander, M. Tanner, Factors motivating individuals to take precautionary action for an expected earthquake in Istanbul, *Risk Anal.* 30 (8) (2010) 1181–1195.
- [23] J.A. Barbera, D.J. Yeatts, A.G. Macintyre, Challenge of hospital emergency preparedness: analysis and recommendations, *Disaster Med. Public Health Prep.* 3 (S1) (2009) S74–S82.
- [24] M. Krajewski, M. Sztajnkrzyca, A. Báez, Hospital disaster preparedness in the United States: new issues, new challenges, *Internet J. Rescue Disaster Med.* 4 (2004) 2.
- [25] B.H. Bartley, J.B. Stella, L.D. Walsh, What a disaster?! Assessing utility of simulated disaster exercise and educational process for improving hospital preparedness, *Prehospital Disaster Med.* 21 (4) (2006) 249–255.
- [26] A. İytemür, S. Tekeli Yeşil, The examination of views of nurses working at a university hospitals on hospital disaster and emergency plans, In press, *J. Hacettepe University Faculty of Nursing* 7 (2) (2020).
- [27] The ICSI "Safety Culture" working group, *Safety Culture: from Understanding to Action*. Issue 2018-01 of the Cahiers de la Sécurité Industrielle collection, Institut pour une Culture de Sécurité Industrielle (ICSI), Toulouse, France, 2017. Technical report. Available at: [https://www.icsi-eu.org/documents/88/csi\\_1801-safety\\_culture\\_from\\_understanding\\_to\\_action.pdf](https://www.icsi-eu.org/documents/88/csi_1801-safety_culture_from_understanding_to_action.pdf).
- [28] The U.S. Federal Emergency Management Agency (FEMA). "Building Cultures of Preparedness: A Report for the Emergency Management Higher Education Community, FEMA," Washington, DC, 2019. Technical report. Available at: [https://training.fema.gov/hiedu/docs/latest/2019\\_cultures\\_of\\_preparedness\\_report\\_10.22.18%20final.pdf](https://training.fema.gov/hiedu/docs/latest/2019_cultures_of_preparedness_report_10.22.18%20final.pdf).
- [29] Y. Kodama, T. Oikawa, K. Hayashi, M. Takano, M. Nagano, K. Onoda, et al., Impact of natural disaster combined with nuclear power plant accidents on local medical services: a case study of minamisoma municipal general hospital after the Great East Japan earthquake, *Disaster Med. Public Health Prep.* 8 (2014) 471–476.
- [30] T.L. O'Sullivan, D. Dow, M.C. Turner, L. Lemyre, Disaster and emergency management: Canadian nurses' perceptions of preparedness on hospital front lines, *Prehospital Disaster Med.* 23 (S1) (2008) s11–s19.
- [31] A.S. Litwin, A.C. Avgar, E.R. Becker, Superbugs versus outsourced cleaners: employment arrangements and the spread of health care-associated infections. *Indus. Lab. Rel. Rev.* 70 (3) (2017) 610–641, <https://doi.org/10.1177/0019793916654482>.
- [32] P.L. Burns, B. Aitken, B. Raphael, Where are general practitioners when disaster strikes? *Med. J. Aust.* 202 (7) (2015) 356–358.
- [33] L.A. Slepiski, Emergency preparedness and professional competency among health care providers during hurricanes Katrina and Rita: pilot study results, *Disaster Manag. Response* 5 (4) (2007) 99–110.
- [34] Q. Liu, D. Luo, J.E. Haase, Q. Guo, X.Q. Wang, S. Liu, L. Xia, Z. Liu, J. Yang, B. X. Yang, The experiences of health-care providers during the COVID-19 crisis in China: a qualitative study, *Lancet Glob Health* (2020), [https://doi.org/10.1016/S2214-109X\(20\)30204-7](https://doi.org/10.1016/S2214-109X(20)30204-7). Published Online. (Accessed 29 April 2020).
- [35] The Lancet COVID-19: protecting health-care workers [editorial]. *The Lancet*. 2020;21:922. Available at: [https://www.thelancet.com/journals/lancet/article/PIIS0140-6736\(20\)30644-9/fulltext](https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)30644-9/fulltext).
- [36] BBC, Coronavirus: 'half of A&E Team' Test Positive, 2020. Available at: <https://www.bbc.co.uk/news/uk-wales-52263285>. (Accessed 14 April 2020).
- [37] International Labour Office, *Guidelines on Decent Work in Public Emergency Services*, International Labour Office, Geneva, ILO, 2019.
- [38] Burdorf A, Porru F, Rugulies R. The COVID-19 (Coronavirus) pandemic: consequences for occupational health. *Scand J Work Environ Health Online-first-article doi:10.5271/sjweh.3893*.
- [39] California Emergency Medical Services Authority (EMSA), *HICS (Hospital Incident Command System) Guidebook Fifth Edition*, 2014. Available at: <https://emsa.ca.gov/disaster-medical-services-division-hospital-incident-command-system/>. (Accessed 1 February 2020).
- [40] WHO. *Hospital Emergency Response Checklist WHO, 2011*. Copenhagen.
- [41] Turkish Ministry of Health Publications, HAP. *Hastane Afet Ve Acil Durum Planı Hazırlama Kılavuzu (Hospital Disaster and Emergency Planning Guideline)*, vol. 1020, Publication No, 2015, 978-975-590-590-7, 2.
- [42] A. Djalali, V. Hosseinijanab, M. Peyravi, M. Nekoei-Moghadam, B. Hosseini, L. Schoenthal, K.L. Koenig, The hospital incident command system: modified model for hospitals in Iran, *PLOS Currents Disasters* (2015 Mar 27), <https://doi.org/10.1371/currents.dis.45d66b5258f79c1678c6728dd920451a> first ed.
- [43] The Hospital Incident Command System Guidebook Japanese version. [http://hics-j.org/jpn\\_hics\\_Jul2016.pdf](http://hics-j.org/jpn_hics_Jul2016.pdf). (Accessed 13 August 2020).