

## **Work-related accidents and illnesses in the Foodservice Industry - A systematic review**

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### **INTRODUCTION**

Among foodservice workers the occurrence of workplace accidents, high stress and the exposure to uncomfortable tasks positions and physical workload, associated with hypertension and excessive body weight are related with high absenteeism levels. This systematic review aimed to assess work-related accidents and illnesses that can cause absenteeism in food preparation of Foodservice Industry.

### **MATERIAL AND METHODS**

In this study a systematic review was performed according to the principles of the PRISMA Statement [1]. After the identification, screening and eligibility criteria, 25 studies were included with information about work-related accidents or illnesses in Foodservice Industry, mostly related with food preparation in kitchens and restaurants [2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26].

### **RESULTS AND DISCUSSION**

From the selected 25 studies 18 examined the occurrence of work-related illnesses in foodservice industry [3, 4, 5, 7, 9, 10, 11, 12, 15, 16, 17, 18, 19, 20, 21, 23, 24, 26] and 7 of the 25 examined the occurrence of work-related accidents [2, 6, 8, 13, 14, 22, 25]. Only 5 studies established relation between the occurrence of accidents and illnesses with absenteeism levels: the main causes of absenteeism seemed to be multisite pain and musculoskeletal diseases, skin diseases, slips, falls and burns (1; 9; 13; 24; 25). According to some of the studies, obesity appears to be related with the occurrence with multisite musculoskeletal pain and venous diseases of the lower limbs [7, 9, 12, 17]. Cooking fumes may be major contributors to respiratory symptoms and can cause both allergic symptoms and upper respiratory tract infections, resulting in a lung function decline [4, 19]. One of the risk factors found was prolonged standing which may influence the onset or aggravation of venous diseases of the lower limbs, the appearance of low back pain or lower limb pain by inducing a decrease in plantar pain-pressure threshold over the workday [7, 11, 18]. Also heat stress in kitchens, due to high air temperature and humidity, can lead to health risks like blood circulation problems and kidney dysfunctions like microalbuminuria [7, 19, 20].

### **CONCLUSIONS**

Foodservice work is heavy and physically demanding and involves prolonged standing posture, awkward postures and exposure to high heat and humidity levels which can contribute to heat-related illnesses among workers that spend hours under these stressful conditions. There is a high prevalence of excess weight among foodservice workers, which indicates an urgent need to control this important risk factor of chronic diseases and absenteeism. The more important causes of absenteeism in Foodservice were multisite pain and musculoskeletal diseases, skin diseases and the occurrence of slips, falls and burns. However it seems there is little research concerning risk factors of absenteeism in the Foodservice Industry.

## REFERENCES

- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & Altman, D. (2009). Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement. *PLoS Medicine*, 6(7), e1000097. <https://doi.org/10.1371/journal.pmed.1000097>
- Ajslev, J., Dastjerdi, E. L., Dyreborg, J., Kines, P., Jeschke, K. C., Sundstrup, E., ... Andersen, L. L. (2017). Safety climate and accidents at work: Cross-sectional study among 15,000 workers of the general working population. *Safety Science*, 91, 320–325. <https://doi.org/10.1016/j.ssci.2016.08.029>
- Bigert, C., Lönn, M., Feychting, M., Sjögren, B., Lewné, M., & Gustavsson, P. (2013). Incidence of myocardial infarction among cooks and other restaurant workers in Sweden 1987–2005. *Scandinavian Journal of Work, Environment & Health*, 39(2), 204–211. <https://doi.org/10.5271/sjweh.3331>
- Bilge, U., Unluoglu, I., Son, N., Keskin, A., Korkut, Y., & Unalacak, M. (2013). Occupational allergic diseases in kitchen and health care workers: an underestimated health issue. *BioMed Research International*, 2013, 285420. <https://doi.org/10.1155/2013/285420>
- Carøe, T. K., Ebbelhøj, N., & Agner, T. (2014). A survey of exposures related to recognized occupational contact dermatitis in Denmark in 2010. *Contact Dermatitis*, 70(1), 56–62. <https://doi.org/10.1111/cod.12134>
- Courtney, T. K., Verma, S. K., Chang, W.-R., Huang, Y.-H., Lombardi, D. A., Brennan, M. J., & Perry, M. J. (2013). Perception of slipperiness and prospective risk of slipping at work. *Occupational and Environmental Medicine*, 70(1), 35–40. <https://doi.org/10.1136/oemed-2012-100831>
- da Luz, C. M., da Costa Proença, R. P., de Salazar, B. R. O., & do Nascimento Galego, G. (2013). Working conditions at hospital food service and the development of venous disease of lower limbs. *International Journal of Environmental Health Research*, 23(6), 520–530. <https://doi.org/10.1080/09603123.2013.769203>
- Haruyama, Y., Matsuzuki, H., Tomita, S., Muto, T., Haratani, T., Muto, S., & Ito, A. (2014). Burn and cut injuries related to job stress among kitchen workers in Japan. *Industrial Health*, 52(2), 113–20. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/24429518>
- Haukka, E., Kaila-Kangas, L., Luukkonen, R., Takala, E.-P., Viikari-Juntura, E., & Leino-Arjas, P. (2014). Predictors of sickness absence related to musculoskeletal pain: a two-year follow-up study of workers in municipal kitchens. *Scandinavian Journal of Work, Environment & Health*, 40(3), 278–286. <https://doi.org/10.5271/sjweh.3415>
- Haukka, E., Leino-Arjas, P., Ojajärvi, A., Takala, E.-P., Viikari-Juntura, E., & Riihimäki, H. (2011). Mental stress and psychosocial factors at work in relation to multiple-site musculoskeletal pain: a longitudinal study of kitchen workers. *European Journal of Pain (London, England)*, 15(4), 432–8. <https://doi.org/10.1016/j.ejpain.2010.09.005>
- Haukka, E., Leino-Arjas, P., Solovieva, S., Ranta, R., Viikari-Juntura, E., & Riihimäki, H. (2006). Co-occurrence of musculoskeletal pain among female kitchen workers. *International Archives of Occupational and Environmental Health*, 80(2), 141–148. <https://doi.org/10.1007/s00420-006-0113-8>
- Haukka, E., Ojajärvi, A., Takala, E.-P., Viikari-Juntura, E., & Leino-Arjas, P. (2012). Physical workload, leisure-time physical activity, obesity and smoking as predictors of multisite musculoskeletal pain. A 2-year prospective study of kitchen workers. *Occupational and Environmental Medicine*, 69(7), 485–92. <https://doi.org/10.1136/oemed-2011100453>
- Jeong, B. Y. (2015). Cooking processes and occupational accidents in commercial restaurant kitchens. *Safety Science*, 80, 87–93. <https://doi.org/10.1016/j.ssci.2015.07.014>
- Kica, J., & Rosenman, K. D. (2012). Multisource Surveillance System for Work-Related Burns. *Journal of Occupational and Environmental Medicine*, 54(5), 642–647. <https://doi.org/10.1097/JOM.0b013e31824ed31a>
15. Kim, H., Jayaraman, S., Landsbergis, P., Markowitz, S., Kim, S., & Dropkin, J. (2013). Perceived discrimination from management and musculoskeletal symptoms among New York City restaurant workers. *International Journal of Occupational and Environmental Health*, 19(3), 196–206. <https://doi.org/10.1179/2049396713Y.0000000031>
16. Lembo, S., Lembo, C., Patruno, C., Balato, A., Balato, N., & Ayala, F. (2014). Pizza Makers' Contact Dermatitis. *Dermatitis*, 25(4), 191–194. <https://doi.org/10.1097/DER.0000000000000055>
17. Santos, J. Dos, Ferreira, A. A., Meira, K. C., & Pierin, A. M. G. (2013). Excess weight in employees of food and nutrition units at a university in São Paulo State. *Einstein (Sao Paulo, Brazil)*, 11(4), 486–91. Retrieved from <http://www.ncbi.nlm.nih.gov/pubmed/24488389>
18. Shankar, S., Shanmugam, M., & Srinivasan, J. (2015). Workplace factors and prevalence of low back pain among male commercial kitchen workers. *Journal of Back and Musculoskeletal Rehabilitation*, 28(3), 481–488. <https://doi.org/10.3233/BMR-140544>
19. Singh, A., Chandrasekharan Nair, K., Kamal, R., Bihari, V., Gupta, M. K., Mudiam, M. K. R., ... Srivastava, A. K. (2016). Assessing hazardous risks of indoor airborne polycyclic aromatic hydrocarbons in the kitchen and its association with lung functions and urinary PAH metabolites in kitchen workers. *Clinica Chimica Acta*, 452, 204–213. <https://doi.org/10.1016/j.cca.2015.11.020>
20. Singh, A., Kamal, R., Mudiam, M. K. R., Gupta, M. K., Satyanarayana, G. N. V., Bihari, V., ... Kesavachandran, C. N. (2016). Heat and PAHs Emissions in Indoor Kitchen Air and Its Impact on Kidney Dysfunctions among Kitchen Workers in Lucknow, North India. *PLoS One*, 11(2), e0148641. <https://doi.org/10.1371/journal.pone.0148641>
21. Subramaniam, S., & Murugesan, S. (2015). Investigation of work-related musculoskeletal disorders among male kitchen workers in South India. *International Journal of Occupational Safety and Ergonomics*, 21(4), 524–531. <https://doi.org/10.1080/10803548.2015.1096063>
22. Swedler, D. I., Verma, S. K., Huang, Y.-H., Lombardi, D. A., Chang, W.-R., Brennan, M., & Courtney, T. K. (2015). A structural equation modelling approach examining the pathways between safety climate, behaviour performance and workplace slipping. *Occupational and Environmental Medicine*, 72(7), 476–481. <https://doi.org/10.1136/oemed2014-102496>
23. Vester, L., Thyssen, J. P., Menné, T., & Johansen, J. D. (2012a). Consequences of occupational food-related hand dermatoses with a focus on protein contact dermatitis. *Contact Dermatitis*, 67(6), 328–333. <https://doi.org/10.1111/j.1600-0536.2012.02101.x>
24. Vester, L., Thyssen, J. P., Menné, T., & Johansen, J. D. (2012b). Occupational food-related hand dermatoses seen over a 10-year period. *Contact Dermatitis*, 66(5), 264–270. <https://doi.org/10.1111/j.1600-0536.2011.02048.x>
25. Yeoh, H. T., Lockhart, T. E., & Wu, X. (2013). Non-fatal occupational falls on the same level. *Ergonomics*, 56(2), 153–165. <https://doi.org/10.1080/00140139.2012.746739>
26. Zorba, E., Karpouzis, A., Zorbas, A., Bazas, T., Zorbas, S., Alexopoulos, E., ... Konstantinidis, T. (2013). Occupational Dermatoses by Type of Work in Greece. *Safety and Health at Work*, 4(3), 142–148. <https://doi.org/10.1016/j.shaw.2013.06.001>