



UNIVERSITI PUTRA MALAYSIA

***BURNOUT AND ITS PREDICTORS AMONG PHARMACIST IN
GOVERNMENT HOSPITALS IN SELANGOR, MALAYSIA DURING
COVID-19 PANDEMIC***

NIVAHSSHINIE A/P SUBRAMANIAM

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By

NIVAHSSHINIE A/P SUBRAMANIAM

**Thesis Submitted to the School of Graduate Studies, Universiti Putra Malaysia, in
Fulfillment of the Requirements for the Degree of Master of Science**

December 2021

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Abstract of thesis presented to the Senate of Universiti Putra Malaysia in
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December 2021

**Chairman : Professor Datin Sherina Mohd Sidik, MBBS,
MMED, PhD**
Faculty : Medicine and Health Sciences

Pharmacists had been found to be highly susceptible and at risk to burnout. International Classification of Diseases (ICD-11) has classified burnout as an occupational phenomenon. In Malaysia, several local published researches have investigated burnout among healthcare professionals but mostly international studies exist on burnout among pharmacists. Psychological related studies on healthcare workers rarely include pharmacists despite their roles as frontliners during pandemics. An analytical cross-sectional study was conducted to determine the prevalence and predictors of burnout among pharmacists working in government hospitals in Selangor. Pharmacists working in five government hospitals in Selangor were included in this study. Multistage random sampling was used to select the hospitals. Probability proportionate to size technique was used to determine the required sample size from each hospital. The data were collected via email using Google form containing self-administered questionnaires. The questionnaires included socio-demographic characteristics, Copenhagen Burnout Inventory (CBI), Job Satisfaction Survey (JSS), HSE Management Standards Indicator Tool (HSE MS-IT), Generalized Anxiety Disorder-7 Questionnaire (GAD-7), Patient Health Questionnaire (PHQ-9) and Rosenberg Self-esteem Scale (RSES). Data were analyzed using the statistical computer software of SPSS (version 25). Descriptive statistics were conducted to obtain frequency and percentage of variables. Chi square was used to determine the association between variables at level of significance $p < 0.05$. Those variables with $p < 0.25$ were selected for multivariate logistic regression analysis to determine the predictors of burnout. In multiple logistic regression analysis, statistical or stepwise regression technique was used. The results were expressed as odds ratio with 95% CI and two-sided $p < 0.05$ was considered as statistically significant. Model performance was assessed using the area under the Receiver Operating Characteristic curve which measured the model discrimination. Multicollinearity was checked for intercorrelations among the predictors.

The response rate was 83% where 312 out of 376 pharmacists completed the questionnaire. In this study, 33 pharmacists (10.6%) had job dissatisfaction and 174 pharmacists (55.8%) had work stress. Approximately 158 pharmacists (50.6%) reported anxiety while 152 pharmacists (48.7%) reported depression. On the other hand, 62 pharmacists (19.9%) had low self-esteem. Prevalence of burnout among pharmacist in this study was reported as 52.9% (Personal), 66.0% (Work-related) and 47.1% (Client-related). The significant predictors of personal burnout based on multiple logistic regression were gender (AOR 2.24, 95% CI 1.29 to 3.89), working hour per week (AOR 2.92, 95% CI 1.60 to 5.32), job satisfaction (AOR 13.00, 95% CI 3.37 to 50.16) and depression (AOR 3.33, 95% CI 1.98 to 5.61). The significant predictors of work-related burnout for male were work stress (AOR 9.10, 95% CI 3.12 to 26.60) and anxiety (AOR 5.91, 95% CI 2.03 to 17.25) while for female were anxiety (AOR 5.91, 95% CI 2.86 to 12.23) and self-esteem (AOR 5.88, 95% CI 1.68 to 20.56). For client-related burnout, working hours per week (AOR 2.44, 95% CI 1.39 to 4.28), job satisfaction (AOR 3.91, 95% CI 1.49 to 10.27) and anxiety (AOR 2.61, 95% CI 1.57 to 4.32) were the significant predictors.

The findings of present study highlighted the prevalence of burnout, association between variables and predictors of burnout. The study successfully concluded gender as one of the significant predictor for personal and work-related burnout, therefore suggested that females were more susceptible to burnout compared to male pharmacists. Those with longer working hour per week were found to have personal and client-related burnout in this study. Pharmacists with job dissatisfaction were also susceptible to personal and client-related burnout compared to those with higher or average level of job satisfaction. Depression and anxiety found to play an important role in burnout. Based on the results reported in this study, pharmacists with depression reported personal burnout and those with anxiety reported work-related and client-related burnout. Besides, work stress and self-esteem were also found to be significant predictors for work-related burnout. Pharmacists with work stress and low level of self-esteem were more susceptible to burnout compared to those without work stress and normal level of self-esteem. Thus, the research questions have been answered and the objectives have also been achieved. This present research reduces the knowledge gap and provided a reference for the topic in Asian context. The results can serve as a baseline to develop an effective module to reduce burnout among the pharmacists.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

**LESU UPAYA DAN PERAMALNYA DI KALANGAN PEGAWAI
FARMASI DI HOSPITAL KERAJAAN DI SELANGOR, MALAYSIA
SEMASA PANDEMIK COVID-19**

Oleh

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Pegawai farmasi merupakan golongan yang berisiko untuk mengalami lesu upaya. *International Classification of Diseases (ICD-11)* telah menyenaraikan lesu upaya sebagai satu fenomena berkaitan tempat kerja. Terdapat beberapa kajian yang telah dijalankan dikalangan professional kesihatan di Malaysia tetapi kebanyakan kajian yang melibatkan pegawai farmasi adalah berdasarkan luar negara. Kajian berkaitan psikologi dikalangan professional kesihatan jarang merangkumi pegawai farmasi walaupun golongan ini merupakan petugas barisan hadapan semasa situasi pandemik. Kajian analitik dijalankan untuk mengenal pasti prevalen dan peramal lesu upaya di kalangan pegawai farmasi yang berkhidmat di hospital kerajaan di Selangor. Pegawai farmasi dari lima buah hospital kerajaan di Selangor telah dilibatkan dalam kajian ini. Bilangan hospital untuk kajian dipilih melalui pensampelan rawak mudah berperingkat. Persampelan dengan kebarangkalian berkadar dengan saiz telah digunakan untuk menentukan saiz sampel yang diperlukan dari setiap hospital. Kaedah soal selidik secara atas talian (*Google form*) telah digunakan untuk mengumpul data melalui emel termasuk ciri-ciri sosio-demografi, lesu upaya (*Copenhagen Burnout Inventory, CBI*), kepuasan di tempat kerja (*Job Satisfaction Survey, JSS*), tekanan kerja (*HSE Management Standards Indicator Tool, HSE MS-IT*), kebimbangan (*Generalized Anxiety Disorder-7 Questionnaire, GAD-7*), kemurungan (*Patient Health Questionnaire, PHQ-9*) dan penilaian harga diri (*Rosenberg Self-esteem Scale, RSES*). Data telah dianalisis dengan menggunakan *Statistical Package for Social Sciences Software* (versi 25). Statistik deskriptif telah dijalankan untuk mendapatkan kekerapan dan peratusan pembolehubah. Analisis inferensi dilakukan dengan menggunakan khi kuasa dua untuk menentukan hubungan antara pembolehubah pada tahap signifikan $p < 0.05$. Pembolehubah dengan $p < 0.25$ telah dipilih untuk analisis regresi logistik multivariat bagi menentukan peramal. Dalam analisis regresi logistik berbilang, teknik regresi langkah demi langkah telah digunakan. Keputusan telah dinyatakan sebagai nisbah ods dengan 95% CI. Unggulan dua sisi

$p < 0.05$ dianggap sebagai statistik yang signifikan. Kawasan di bawah lengkung *Receiver Operating Characteristic* digunakan untuk mengukur diskriminasi model. Multikolinearan telah diperiksa untuk inter-korelasi dikalangan peramal.

Daripada 376 pegawai farmasi, 312 (83%) responden menyertai kajian ini. Seramai 33 pegawai farmasi (10.6%) mempunyai rasa tidak puas hati ditempat kerja dan 174 pegawai farmasi (55.8%) mengalami tekanan kerja. Seramai 158 responden (50.6%) mengalami kebimbangan manakala 152 responden (48.7%) dilaporkan mengalami kemurungan. Selain itu, 62 responden (19.9%) melaporkan penilaian harga diri yang rendah. Prevalen lesu upaya di kalangan pegawai farmasi yang dilaporkan adalah sebanyak 52.9% (*Personal*), 66.0% (*Work-related*) and 47.1% (*Client-related*). Peramal *personal burnout* yang signifikan berdasarkan regresi logistic berbilang ialah jantung (AOR 2.24, 95% CI 1.29 to 3.89), jumlah waktu bekerja/seminggu (AOR 2.92, 95% CI 1.60 to 5.32), kepuasan di tempat kerja (AOR 13.00, 95% CI 3.37 to 50.16) dan kemurungan (AOR 3.33, 95% CI 1.98 to 5.61). Peramal *work-related burnout* yang signifikan untuk jantung lelaki adalah tekanan kerja (AOR 9.10, 95% CI 3.12 to 26.60) dan kebimbangan (AOR 5.91, 95% CI 2.03 to 17.25) manakala peramal untuk jantung perempuan adalah kebimbangan (AOR 5.91, 95% CI 2.86 to 12.23) dan penilaian harga diri (AOR 5.88, 95% CI 1.68 to 20.56). Manakala untuk *client-related burnout*, peramal signifikan adalah jumlah waktu bekerja/seminggu (AOR 2.44, 95% CI 1.39 to 4.28), kepuasan di tempat kerja (AOR 3.91, 95% CI 1.49 to 10.27) dan kebimbangan (AOR 2.61, 95% CI 1.57 to 4.32).

Kajian ini mempunyai beberapa penemuan penting yang merangkumi prevalen lesu upaya, hubungan diantara pembolehubah dan peramal lesu upaya. Kajian ini telah menyimpulkan bahawa jantung merupakan salah satu peramal bagi *personal* dan *work-related burnout*, dan menyatakan bahawa pegawai farmasi perempuan mudah terdedah kepada lesu upaya berbanding dengan pegawai farmasi lelaki. Responden yang merekodkan jumlah waktu bekerja/seminggu yang tinggi mengalami *personal* dan *client-related burnout*. Pegawai farmasi yang tidak mempunyai kepuasan di tempat kerja juga mudah terdedah kepada *personal* dan *client-related burnout* berbanding dengan pegawai farmasi yang mempunyai kadar kepuasan di tempat kerja yang tinggi atau sederhana. Kemurungan dan kebimbangan memainkan peranan penting dalam lesu upaya. Berdasarkan penemuan kajian ini, pegawai farmasi yang mempunyai kemurungan merekodkan *personal burnout* dan pegawai farmasi yang mempunyai kebimbangan pula merekodkan *work-related* dan *client-related burnout*. Selain itu, tekanan kerja dan penilaian harga diri juga merupakan peramal penting bagi *work-related burnout*. Pegawai farmasi yang mempunyai tekanan kerja dan penilaian harga diri yang rendah mudah terdedah kepada lesu upaya berbanding dengan pegawai farmasi yang tiada tekanan kerja dan mempunyai penilaian harga diri yang normal. Soalan kajian telah berjaya dijawab dan tujuan kajian juga telah dicapai melalui projek ini. Kajian ini telah berjaya mengurangkan jurang penyelidikan dan memberikan rujukan untuk topik ini dalam konteks Asia. Lesu upaya di kalangan pegawai farmasi perlu diberi perhatian dan satu modul berkesan perlu dibina berdasarkan penemuan kajian ini untuk mengurangkan risiko lesu upaya.

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- the research conducted and the writing of this thesis was under our supervision;
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LIST OF ABBREVIATIONS

ADR	Adverse Drug Reaction
AOR	Adjusted Odds Ratio
CBI	Copenhagen Burnout Inventory
CDC	Centers for Disease Control and Prevention
CDR	Cytotoxic Drug Reconstitution
CI	Confidence Interval
DIS	Drug Information System
FIP	International Pharmaceutical Federation
GAD	Generalized Anxiety Disorder
ICD	International Classification of Diseases
ISCO	International Standard Classification of Occupations
JSS	Job Satisfaction Survey
MOH	Ministry of Health
MS-IT	Management Standards Indicator Tool
OR	Odds Ratio
PHQ	Patient Health Questionnaire
ROC	Receiver Operating Characteristic
RSES	Rosenberg Self-esteem Scale
TDM	Therapeutic Drug Monitoring
TPN	Total Parenteral Nutrition
WHO	World Health Organization

CHAPTER 1

INTRODUCTION

This chapter provides an overview on burnout among pharmacists and the importance of this study to be conducted among pharmacists. It highlights the study objectives and research hypotheses.

1.1 Background

Burnout is the most frequent encountered health problem increasing in trend with a prevalence of 20%-60% among different work professions (Rudman & Gustavsson, 2012). International Classification of Diseases (ICD-11) has classified burnout as an occupational phenomenon (WHO, 2019). Results from few previous researches revealed that healthcare professions are associated with highest risk to burnout (Laschinger, Leiter, Day, & Gilin, 2009; Iglesias, Vallejo, & Fuentes, 2010). Burnout is found to affect all professional categories of hospital employees (Marques, Alves, Queirós, Norton, & Henriques, 2018). Burnout was found to be high in both outpatient and inpatient providers in high-income countries, according to a systematic study (Roberts, Cannon, & Wellik, 2013).

Emotional exhaustion and depersonalization was encountered at moderate levels by pharmacists, especially those working as frontliners (Calgan, Aslan, & Yegenoglu, 2011). In a systematic review, burnout was found to be common among a variety of frontline primary healthcare professionals including doctors, nurses, pharmacists and community health employees, working in a variety of outpatient health care settings (Dugani, Afari, Hirschhorn, Ratcliffe, Veillard, Martin et al., 2018). Burnout has been linked to high levels of job tension, long term pressure and workload, and a lack of organizational support (Dugani et al., 2018).

A high rate of critical care pharmacists suffered from burnout whereby 64% of respondents met the criteria for a high degree of burnout which emphasizes the importance of evaluating risk factors for burnout and providing resources for burnout prevention to high-risk practitioners (Ball, Schultheis, Lee, & Bush, 2020). The rate of burnout was 61.2% among US clinical pharmacists (Jones et al., 2017). Pharmacists in South Africa exhibited low to moderate levels of burnout while 56.2% of French pharmacists reported to have experienced burnout (Rothmann & Malan, 2011; Balayssac, Pereira, Virot, Collin, Alapini, Cuny, & Vennat, 2017). Besides, Bhagavathula, Abegaz, Belachew, Gebreyohannes, Gebresillassie, & Chattu, (2018) reported that the overall prevalence of burnout was 13.7% among healthcare professionals in Ethiopia. Highest level of burnout was observed in 14% of the professionals in the pharmaceutical industry in the Republic of Serbia (Jovanović, Krajnović, & Marinković, 2018). In Malaysia, the

overall burnout prevalence among healthcare workers was reported as 53.8% (personal), 39.1% (work-related) and 17.4% (client-related) (Roslan, Saiful, Yusoff, Asrenee, & Morgan, 2021). The variation in prevalence of burnout reported across countries might be due to differences in socioeconomic, cultural and healthcare infrastructure among these countries. Pharmacists were experiencing burnout even before the COVID-19 pandemic (McQuade, Reed, DiDomenico, Baker, Shipper, & Jarrett, 2020). Pharmacists reported burnout at a higher rate compared to the rates of burnout reported previously during the COVID-19 pandemic (Johnston, Reilly, Scholz, Georgousopoulou, & Mitchell, 2021).

1.2 Problem Statement

The prevalence of burnout reported among pharmacists varies where previous studies reported that at any given time, more than 50% of pharmacists experiencing burnout (Higuchi, Inagaki, Koyama, Kitamura, Sendo, Fujimori et al., 2016; Jones, Roe, Loudon, & Tubbs, 2017; Durham, Bush, & Ball, 2018; Neumann, Mau, Virani, Denzen, Boyle et al., 2018). Burnout affects and threatens any level of the health-care workforce (Tan, Kanneganti, Lim, Tan, & Chua, 2020). Burnout is linked to lower patient satisfaction, reduced work performance and high staff turnover rates among healthcare professionals (Edwards & Burnard, 2003; Stafford-Brown & Pakenham, 2012). Burnout in pharmacists can result in work frustration, a lack of engagement and responsibility within the organization and the desire to quit from the profession. Additionally, pharmacists who are burned out often associated with issues such as increased absenteeism, staff loss, decreased efficiency and less productivity at work (Leone, Huibers, Knottnerus, & Kant, 2007). Previous literatures reported that depression, anxiety and work related stressors were found to be significantly associated with burnout among pharmacists (Balayssac et al., 2017; Hagemann, Reed, Bradley, Clements, Cohen, Coon et al., 2020). It is crucial to identify and characterize burnout among pharmacists because it can lead to substantial negative consequences for both providers and patient care.

Burnout at moderate to high level is linked to lower patient care outcomes and more medical errors. Burnout among healthcare staffs also affect decision making, patient safety and clinical outcomes (Hall, Johnson, Watt, Tsipa, & O'Connor, 2016). In Malaysia, several local published researches have investigated burnout among healthcare professionals such as doctors and nurses but mostly international studies exist on burnout among pharmacists. Limited local studies on pharmacist's burnout might be due to differences in working conditions and healthcare system in international literatures. Psychological related studies on healthcare workers rarely include pharmacists despite their roles as frontliners during pandemics (Giusti, Pedroli, D'Aniello, Stramba Badiale, Pietrabissa, Manna et al., 2020; Morgantini, Naha, Wang, Francavilla, Acar, Flores et al., 2020). Hence, it is vital to measure pharmacist's burnout and the associated factors.

1.3 Significance of the Study

Monitoring pharmacists' burnout levels on a regular basis may provide valuable evidence for both primary and secondary prevention of this global condition (Sacre, Obeid, Choueiry, Hobeika, Farah, Hajj et al., 2019). Recognizing and addressing potential burnout indicators and risk factors on a system and profession-wide level can help to reduce work-related pressures and boost satisfaction and fulfilment of healthcare providers (Bridgeman & Barone, 2018). This study is necessary in order to fully understand the factors that lead to burnout, as well as to identify the full extent of the issue. Burnout has been widely studied and it is one of the modifiable factors in improving the working conditions of healthcare professionals providing human service (Maslach & Leiter, 2016). A better understanding of the factors affecting burnout among pharmacists will enable hospital administrators to identify optimizing strategies for improving their working conditions. Findings about hospital pharmacists' burnout may be used to develop approaches to help them stay in the profession and manage their health.

Referring to Pharmacy Program Statistics Report (2019), number of medication counseling conducted in MOH facilities in Selangor was 294, 896; total medicine information enquiry received by MOH facilities in Selangor was 47,439 and total Adverse Drug Reaction (ADR) reported in MOH facilities in Selangor was 3,354, which were the highest compared to others states in Malaysia. Besides, Selangor has the second highest number of admissions in MOH hospitals by state which was reported as 337, 199 and the highest number of outpatient attendances in MOH hospitals which was 3,365,135 (Health indicators, 2019). Selangor is one of the location with the highest health expenditure and highest population of 6.53 million (Annual Report Ministry of Health Malaysia, 2016; Annual Report Ministry of Health Malaysia, 2019). Therefore, this study aimed to measure the prevalence and predictors of burnout among pharmacists in government hospitals in Selangor. The findings of this study may be used in potential intervention studies to help mitigate burnout. This will help pharmacists understand burnout and why it occurs, as well as how to deal with their condition and the consequences of burnout.

1.4 Research Questions

- i. What is the prevalence of burnout among pharmacists in government hospitals in Selangor?
- ii. What are the predictors of burnout among pharmacists in government hospitals in Selangor?

1.5 Study Objectives

1.5.1 General Objective

To determine the prevalence and predictors of burnout (personal, work-related and client related) among pharmacists in government hospitals in Selangor.

1.5.2 Specific Objectives

- i. To identify the socio-demographic characteristics (age, gender, race, marital status, education level, monthly income, working experience, working hours per week and work setting) among pharmacists in government hospitals in Selangor, and their association with burnout (personal, work-related and client related).
- ii. To determine the prevalence of burnout (personal, work-related and client related) among pharmacists in government hospitals in Selangor.
- iii. To determine job satisfaction, work stress, anxiety, depression and self-esteem among pharmacists in government hospitals in Selangor, and their association with burnout (personal, work-related and client related).
- iv. To determine the predictors of burnout (personal, work-related and client related) among pharmacists in government hospitals in Selangor.

1.6 Research Hypothesis

The following are the hypotheses tested in the study:

1. There is a significant association between socio-demographic characteristics (age, gender, race, marital status, education level, monthly income, working experience, working hours per week and work setting) with burnout (personal, work-related and client related) among pharmacists in government hospitals in Selangor.
2. There is a significant association between job satisfaction, work stress, anxiety, depression and self-esteem with burnout (personal, work-related and client related) among pharmacists in government hospitals in Selangor.

REFERENCES

- Adams, J. L., Wickstrom, S. L., Burgess, M. J., Lee, P. P., & Escarce, J. J. (2003). Sampling Patients within Physician Practices and Health Plans: Multistage Cluster Samples in Health Services Research. *Health Serv Res*, 38(6 Pt 1):1625-40. doi: 10.1111/j.1475-6773.2003.00196.x..
- Aday, L. A., & Cornelius, L. J. (2006). *Designing and conducting health surveys: A comprehensive guide* (3rd ed., p. 546). San Francisco, CA: John Wiley & Sons.
- Alharbi, A. S., & Alkharif, R. M. (2020). Prevalence of burnout among hospital pharmacists at National Guard Hospital in Riyadh Saudi Arabia. *Int. Res. J. Public Environ. Health*, 7(1):14–20.
- Alkema, K., Linton, J. M., Davies, R. (2008). A study of the relationship between self-care, compassion satisfaction, compassion fatigue, and burnout among hospice professionals. *Journal of social work in end-of-life*. 4(2):101–119.
- Alnazly E, Khraisat OM, Al-Bashaireh AM, Bryant CL (2021) Anxiety, depression, stress, fear and social support during COVID-19 pandemic among Jordanian healthcare workers. *PLoS ONE* 16(3): e0247679. <https://doi.org/10.1371/journal.pone.0247679>
- Ally, H. M., Nemr, N. A., Kishk, R. M., Elsaid, N. M. A. (2021). Stress, anxiety and depression among healthcare workers facing COVID-19 pandemic in Egypt: a cross-sectional online-based study. *BMJ*. 11:e045281. doi:10.1136/bmjopen-2020-045281
- Ang, S. Y., Dhaliwal, S. S., Ayre, T. C., Uthaman, T., Fong, K. Y., Tien, C. E., et al. (2016). Demographics and Personality Factors Associated with Burnout among Nurses in a Singapore Tertiary Hospital. *BioMed research international*, 6960184. <https://doi.org/10.1155/2016/6960184>
- Annual Report Ministry of Health Malaysia (2016). Retrieved from: https://myhdw.moh.gov.my/public/pub//document_library_display/DX4oAsEYWbrF/view/150089
- Annual Report Ministry of Health Malaysia (2019). Retrieved from: http://vlib.moh.gov.my/cms/content.jsp?id=com.tms.cms.section.Section_2e401e01-a0188549-d5315d00-64911b20
- APA. (2021a). Anxiety. American Psychological Association. Retrieved July 01, 2021, from <https://www.apa.org/topics/anxiety>
- APA. (2021b). Self-esteem. American Psychological Association. Retrieved July 01, 2021, from <https://dictionary.apa.org/self-esteem>
- Arbae, M. N. A., Othman, N. A. M., Mahamad, N. F., & Bakri, S. F. Z. (2019).

Study of Perceived Stress among Academicians in Higher Institutional Malaysia, *Journal of Safety, Health and Ergonomics*, 1(1):1-3.

- Balayssac, D., Pereira, B., Viro, J., Collin, A., Alapini, D., Cuny, D., Vennat, B. (2017). Work-related stress, associated comorbidities and stress causes in French community pharmacies: a nationwide cross-sectional study. *PLoS ONE*, 12(8):e0182956. <https://doi.org/10.1371/journal.pone.0182956>
- Ball, A. M., Schultheis, J., Lee, H. J., Bush, P. W. (2020). Evidence of burnout in critical care pharmacists. *American Journal of Health-System Pharmacy*, 77(10):790-796. [10.1093/ajhp/zxaa043](https://doi.org/10.1093/ajhp/zxaa043).
- Bates, I., John, C., Seegobin, P., & Bruno, A. (2018). An analysis of the global pharmacy workforce capacity trends from 2006 to 2012. *Human Resources for Health*, 16(1), 1–7. <https://doi.org/10.1186/s12960-018-0267-y>
- Bessette, H., Chew, C., Kapanen, A. I., Reardon, J., & Yuen, J. (2020). Assessment of Burnout among Canadian Pharmacists Working in Team-based Primary Care Settings Original Research. *Innovations in pharmacy*, 11(4), 1–7.
- Bhagavathula, A. S., Abegaz, T. M., Belachew, S. A., Gebreyohannes, E. A., Gebresillassie, B. M., & Chattu, V. K. (2018). Prevalence of burnout syndrome among health-care professionals working at Gondar University Hospital, Ethiopia. *J Edu Health Promot*, 7:145.
- Bhattachajee, A., Kundu, A., Mukherjee, I. (2016). Role of Job Satisfaction in Managing Sexual Satisfaction, Self Esteem and Mental Health at Work Place. *International Journal of Indian Psychology*, 3(4):67.
- Binub, K. (2019). Burnout among health professionals in a tertiary medical college of northern Kerala, India. *Int J Community Med Public Health*, 6(1):229-233. DOI: <http://dx.doi.org/10.18203/2394-6040.ijcmph20185248>
- Blake, H., Bermingham, F., Johnson, G., Tabner, A. (2020). Mitigating the psychological impact of COVID-19 on healthcare workers: a digital learning package. *Int J Environ Res Public Health*, 17(9). [https://doi: 10.3390/ijerph17092997](https://doi.org/10.3390/ijerph17092997).
- Blumenthal, D., Fowler, J. E., Abrams, M., Collins, S. R. (2020). Covid-19—implications for the health care system. *N Engl J Med*, 383(15):1483-1488. doi: [10.1056/NEJMs2021088](https://doi.org/10.1056/NEJMs2021088)
- Bonde, J. P. E. (2008). Psychosocial factors at work and risk of depression: a systematic review of the epidemiological evidence. *Occup Environ Med*, 65:438–45.
- Boran, A., Shawaheen, M., Khader, Y. S., & Amarin, Z. (2011). Work-related stress among health professionals in northern Jordan. *Occup Med*, 62(2):145–7. <https://doi.org/10.1093/occmed/kqr180>

- Bridgeman, P. J., Bridgeman, M. B. & Barone, J (2018). Burnout syndrome among healthcare professionals. *Am J Health-Syst Pharm* 75(3), 147–152. <https://doi.org/10.2146/ajhp170460>
- Calgan, Z., Aslan, D., & Yegenoglu, S. (2011). Community pharmacists' burnout levels and related factors: an example from Turkey. *Int J Clin Pharm*, 33:92–100. <https://doi.org/10.1007/s11096-010-9461-2>
- CDC (2014). How Pharmacists Can Improve Our Nation's Health. Centers for Disease Control and Prevention. Retrieved from: <https://www.cdc.gov/grand-rounds/pp/2014/20141021-pharmacist-role.html>
- Chowdhury, M. Z. I., & Turin, T. C. (2020). Variable selection strategies and its importance in clinical prediction modelling. *Fam Med Community Health*. 16;8(1):e000262. doi: 10.1136/fmch-2019-000262.
- Community Pharmacy Benchmarking Guideline. (2016). Retrieved from: <https://www.pharmacy.gov.my/v2/sites/default/files/document-upload/community-pharmacy-benchmarking-guideline.pdf>
- Creedy, D. K., Sidebotham, M., Gamble, J., Pallant, J., & Fenwick, J. (2017). Prevalence of burnout , depression , anxiety and stress in Australian midwives : a cross- sectional survey. *BMC Pregnancy and Childbirth*, 1–8. <https://doi.org/10.1186/s12884-016-1212-5>
- Currie, E. J., Carr Hill, R. A. (2012) What are the reasons for high turnover in nursing? A discussion of presumed causal factors and remedies. *Int J Nurs Stud*, 49:1180–9.
- de Oliveira Vasconcelos Filho, P., de Souza, M. R., Elias, P. E. M. (2016). Physicians' job satisfaction and motivation in a public academic hospital. *Hum Resour Health*, 14:75.
- Deriba, B. K., Sinke, S. O., Ereso, B. M., & Badacho, A. S. (2017). Health professionals ' job satisfaction and associated factors at public health centers in West Ethiopia. *Human Resources for Health*, 15:36, 1–7. <https://doi.org/10.1186/s12960-017-0206-3>
- DeVon, H. A., Block, M. E., Moyle-Wright, P., Ernst, D. M., Hayden, S. J., Lazzara, D. J. et al. (2007). A psychometric Toolbox for testing Validity and Reliability. *Journal of Nursing scholarship*, 39(2),155-164.
- Dugani, S., Afari, H., Hirschhorn, L. R., Ratcliffe, H., Veillard, J., Martin, G. et al. (2018). Prevalence and factors associated with burnout among frontline primary health care providers in low- and middle-income countries: A systematic review. *Gates Open Res*, 11;2:4. doi: 10.12688/gatesopenres.12779.3.
- Durham, M. E., Bush, P. W, Ball, A. M,. (2018). Evidence of burnout in health-system pharmacists, *Am J Health Syst Pharm*, 75(23 Supplement 4):S93-

S100. doi: 10.2146/ajhp17081875.

- Eagly, A. H., (1987). Sex differences in social behavior: A social-role interpretation. Lawrence Erlbaum.
- Edwards, D., Burnard, P. (2003). A systematic review of stress and stress management interventions for mental health nurses. *J. Adv. Nurs.* 42, 169–200.
- Edwards, J. A., Webster, S., Van Laar, D., Easton, S. (2008). Psychometric analysis of the UK Health and Safety Executive's Management Standards and work related stress Indicator Tool. *Work & Stress. Journal of Work, Health & Organisations*, 22:96–107.
- Elbeddini, A., Wen, C. X., Tayefehchamani, Y., & To, A. (2020). Mental health issues impacting pharmacists during COVID-19. *Journal of Pharmaceutical Policy and Practice*, 13:46, 1–6. <https://doi.org/10.1186/s40545-020-00252-0>.
- Elhadi, M., Msherghi, A., Elgzairi, M., Alhashimi, A, Bouhuwaish, A., Biala, M. et al. (2020). Burnout Syndrome Among Hospital Healthcare Workers During the COVID-19 Pandemic and Civil War: A Cross-Sectional Study. *Front Psychiatry*, 11:579563. doi: 10.3389/fpsy.2020.579563
- Eslami, A., Kouti, L., Javadi, M. R., Assarian, M., & Eslami, K. (2015). An Investigation of Job Stress and Job Burnout in Iranian Clinical Pharmacist, *J Pharm Care*, 3(1-2):21-25.
- FIP. (2012). Workforce Report. International Pharmaceutical Federation. Retrieved from: <https://www.fip.org/static/fipeducation/2012/FIP-Workforce-Report-2012/pages/6-fip-workforce-report-2012.html>
- FIP. (2017). Pharmacy at a Glance. International Pharmaceutical Federation. Retrieved from: www.fip.org
- FIP. (2018). Pharmacy Workforce Intelligence: Global Trends Report. International Pharmaceutical Federation. Retrieved from: <https://www.fip.org/educationreports>
- FIP. (2019). About FIP. International Pharmaceutical Federation. Retrieved from: <https://www.fip.org>
- FIP. (2020). Pharmacy practice and the FIP sections. International Pharmaceutical Federation. Retrieved from: <https://www.fip.org/pharmacy-practice>
- Fortier, N. (2020). COVID-19, gender inequality, and the responsibility of the state. *International Journal of Wellbeing*, 10(3).

- Galanakis, M., Palaiologou, A., Patsi, G., Velegraki, I.M., Darviri, C. (2016). A literature review on the connection between stress and self-esteem. *Psychology*, 7(5), 687-694. 10.4236/psych.2016.75071
- Gariépy, G., Honkaniemi, H., & Quesnel-Vallée, A. (2016). Social support and protection from depression: Systematic review of current findings in Western countries. *The British Journal of Psychiatry*, 209(4), 284–293. <https://doi.org/10.1192/bjp.bp.115.169094>
- Giusti, E. M., Pedroli, E., D’Aniello, G. E., Stramba Badiale, C., Pietrabissa, G., Manna, C., et al (2020). The psychological impact of the COVID-19 outbreak on health professionals: a cross-sectional study. *Front Psychol*, 11:1684.
- Grover, S., Sahoo, S., Bhalla, A., Avasthi, A. (2018). Psychological problems and burnout among medical professionals of a tertiary care hospital of North India: cross sectional study. *Indian J psychiatry*, 60(2):175-188.
- Guide on Pharmaceutical Industry in Malaysia. (2020). Retrieved from: https://mida.gov.my/wp-content/uploads/2020/07/Guide-on-Pharmaceutical-Industry-In-Malaysia_17072020.pdf
- Hagemann, T. M., Reed, B. N., Bradley, B. A., Clements, J. N., Cohen, L. J., Coon, S. A. et al. (2020). Burnout among clinical pharmacists: Causes, interventions, and a call to action. *J Am Coll Clin Pharm*, 3;832-842.
- Haladyna, T. Downing, S. M., Rodriguez, M. C. (1999). Developing and Validating multiple-choice test items. *Applied Measurement in Education*, 15(3), 309–334. Lawrence Erlbaum Associates, Inc.
- Hall, L. H., Johnson, J., Watt, I., Tsipa, A., O’Connor, D. B. (2016). Healthcare Staff Wellbeing, Burnout, and Patient Safety: A Systematic Review. *PloS One*, 11(7): e0159015. <https://doi.org/10.1371/journal.pone.0159015> PMID: 27391946
- Health indicators (2019). Retrieved from: [https://www.moh.gov.my/moh/resources/Penerbitan/Penerbitan%20Utama/HEALTH%20INDICATOR/Petunjuk%20Kesihatan%202019%20\(Web%20Version\)/mobile/index.html#p=29](https://www.moh.gov.my/moh/resources/Penerbitan/Penerbitan%20Utama/HEALTH%20INDICATOR/Petunjuk%20Kesihatan%202019%20(Web%20Version)/mobile/index.html#p=29)
- Health & Safety Executive. (2007). *Managing the Causes of Work-Related Stress. A Step-By-Step Approach Using the Management Standards*. 2nd ed. Sudbury: HSE Books.
- Higuchi, Y., Inagaki, M., Koyama, T., Kitamura, Y., Sendo, T., Fujimori, M., et al (2016). A cross-sectional study of psychological distress, burnout, and the associated risk factors in hospital pharmacists in Japan. *BMC Public Health*, 16(1):1–8.
- Hosmer, D. W., Lemeshow, S, Sturdivant, R. X. (2013). *Applied logistic*

regression. New York: John Wiley & Sons, Incorporated.

Hosmer, D. W., & Lemeshow, S. (2000). Applied logistic regression (2nd ed.). Hoboken, NJ: Wiley.

HSE. (2021). Work stress. Health and Safety Executive. Retrieved July 01, 2021, <https://www.hse.gov.uk/stress/>

Iglesias, M. E., Vallejo, R. B., Fuentes, P. S. (2010). Reflections on the burnout syndrome and its impact on health care providers. *Ann Afr Med.* 9(4): 197-8.

Iorga, M., Dondas, C., Sztankovszky, L., Antofie, I. (2018). Burnout Syndrome among Hospital Pharmacists in Romania. *Farmacia*, 66(1):66.

ISCO. (2008). International Standard Classification of Occupations. Retrieved from: http://www.ilo.org/wcmsp5/groups/public/@dgreports/@dcomm/@publ/documents/publication/wcms_172572.pdf

Jin, L. T., Poosary, P., Wei, L. K., Riza, Z. Y. A, Jou, T. C., & Ahmad, K. (2016). Burnout Syndrome among Pharmacy Staffs of Hospital Miri, Sarawak. *Sarawak Journal of Pharmacy*, 1;1-15.

Jocic, D. D., & Krajnovic, D. M. (2014). State Anxiety, Stress and Burnout Syndrome Among Community Pharmacists: Relation With Pharmacists' Attitudes and Beliefs. *Indian Journal of Pharmaceutical Education and Research*, 48(2). <https://doi.org/10.5530/ijper.48.2.3>

Johnson, A. R., Jayappa, R., James, M., Kulnu, A., Kovayil, R., & Joseph, B. (2020). Do Low Self-Esteem and High Stress Lead to Burnout Among Health- Care Workers ? Evidence From a Tertiary Hospital in Bangalore, India. *Safety and Health at Work*. 11(3), 347–352. <https://doi.org/10.1016/j.shaw.2020.05.009>

Johnston, K., Reilly, C. L. O., Scholz, B., Georgousopoulou, E. N., & Mitchell, I. (2021). Burnout and the challenges facing pharmacists during COVID - 19 : results of a national survey. *International Journal of Clinical Pharmacy*, 43(3), 716–725. <https://doi.org/10.1007/s11096-021-01268-5>

Jones, G. M., Roe, N. A., Loudon, L., & Tubbs, C. R. (2017). Factors Associated With Burnout Among US Hospital Clinical Pharmacy Practitioners: Results of a Nationwide Pilot Survey. *Hosp Pharm*, 52(11):742–751. <https://doi.org/10.1177/0018578717732339>

Jovanović, V., Krajnović, D., & Marinković, V. (2018). Predictors of Burnout Syndrome among Professionals in the Pharmaceutical Industry in the Republic of Serbia. *Indian Journal of Pharmaceutical Education and Research*, 52(2),311–320. <https://doi.org/10.5530/ijper.52.2.36>

Kang, K., Absher, R., Granko, R. P. (2020). Evaluation of burnout among hospital

- and health-system pharmacists in North Carolina. *Am J Health Syst Pharm*, 77(6), 441–448. <https://doi.org/10.1093/ajhp/zxz339>
- Kacenenbogen, N., Offermans, A. M., Roland, M. (2011). Burnout of general practitioners in Belgium: societal consequences and paths to solutions. *Rev Med Brux*, 32(4):413-23.
- Kerr, R., Mchugh, M., & Mccrory, M. (2009). HSE Management Standards and stress-related work outcomes. *Occup Med (Lond)*, 59(8):574-9. doi: 10.1093/occmed/kqp146.
- Knezević, T., Katić, I., Ivanisević, A. (2009). Impact of management styles on the occurrence of work stress managers. *Business Economics*, 2:332.
- Kristensen, T. S., Borritz, M., Villadsen, E., & Christensen, K. B. (2005). The Copenhagen Burnout Inventory : A new tool for the assessment of burnout. *Work & Stress*, 19(3):192-207. <https://doi.org/10.1080/02678370500297720>
- Kroenke, K., Spitzer, R. L. (2002). The PHQ-9: a new depression diagnostic and severity measure. *Psychiatric Annals*, 32:509-521.
- Kroenke, K., Spitzer, R. L., Williams, J. B. W., Monahan, P. O., & Löwe, B. (2007). Anxiety Disorders in Primary Care : Prevalence, Impairment, Comorbidity and Detection. *Ann Intern Med*, 146:317-325. <https://doi.org/10.7326/003-4819-146-5-200703060-00004>
- Laschinger H.K.S., Leiter, M., Day A, Gilin D. (2009). Workplace empowerment, incivility, and burnout: impact on staff nurse recruitment and retention outcomes. *J Nurs Manag*, 17(3):302-11.
- Lemeshow, S., Hosmer, D. W., Klar, J., & Lwanga, S. K. (1990). Adequacy of Sample Size in Health Studies. John Wiley & Sons Ltd.
- Leone, S. S., Huibers, M. J. H., Knottnerus, J. A., Kant, I. J. (2007). Similarities, overlap and differences between burnout and prolonged fatigue in the working population. *Q J Med*, 100(10):617–27.
- Lin, R. T., Lin, Y. T., Hsia, Y. F., Kuo, C. C. (2021). Long working hours and burnout in health care workers: Non-linear dose-response relationship and the effect mediated by sleeping hours—A cross-sectional study. *J Occup Health*, 63:e12228. <https://doi.org/10.1002/1348-9585.12228>
- Losa Iglesias, M. E., Becerro de Bengoa Vallejo R, Salvadores Fuentes P. (2010). The relationship between experiential avoidance and burnout syndrome in critical care nurses: A cross-sectional questionnaire survey. *International Journal of Nursing Studies*, 47(1), 30–37.
- Lua, P. L., & Imilia, I. (2011). Work-Related Stress Among Healthcare Providers of Various Sectors in Peninsular Malaysia. *MJP-01-09-11*, 1–15. Retrieved

from <http://www.mjpsychiatry.org/index.php/mjp/article/view/153/127>.

- Maher, J. (2014). Nurse mothers valuing care at home and at work: Beyond notions of care scarcity? *Journal of Sociology*, 50(4):531–544. doi: 10.1177/1440783312467519.
- Manan, M. M., Azmi, Y., Lim, Z., Neoh, C. F., & Khan, T. M. (2015). Predictors of job satisfaction amongst pharmacists in Malaysian public hospitals and healthcare clinics. *J Pharm Pract Res*, 45:404–411. doi: 10.1002/jppr.1094.
- Marques, M. M., Alves, E., Queirós, C., Norton, P., & Henriques, A. (2018) The effect of profession on burnout in hospital staff. *Occup Med (Lond)*, 68(3):207-210. doi: 10.1093/occmed/kqy039.
- Maslach, C., Leiter, M. P. (2016). Understanding the burnout experience: recent research and its implications for psychiatry. *World Psychiatry*, 15(2):103-111. doi:10.1002/wps.20311
- Matsuo, T., Kobayashi, D., Taki, F., Sakamoto, F., & Uehara, Y. (2020). Prevalence of Health Care Worker Burnout During the Coronavirus Disease 2019 (COVID-19) Pandemic in Japan. *JAMA Netw Open*, 3(8):e2017271. doi:10.1001/jamanetworkopen.2020.17271
- Mburugu, B. M. (2018). Burn -Out as a Psychological Effect of Widowhood in Meru County, Kenya: Comparative Study of Widows and Widowers. *Journal of Education and Practice*, 9(9):66-71.
- McQuade, B. M., Reed, B. N., DiDomenico, R. J., Baker, W. L., Shipper, A.G., Jarrett, J. B. (2020). Feeling the burn? A systematic review of burnout in pharmacists. *J Am College Clin Pharm*, 3(3):663–75.
- Mesarosova, M. (2016). Psychometric properties of a job satisfaction survey in Slovakia in helping professionals : Preliminary results. *Global Journal of Psychology Research* 6(4), 195-201. <https://doi.org/10.18844/gjpr.v6i4.2419>
- Molero Jurado, M. D. M, Pérez-Fuentes, M. D. C, Gázquez Linares, J. J., Barragán Martín, A. B. (2018). Burnout in Health Professionals According to Their Self-Esteem, Social Support and Empathy Profile. *Front Psychol*, 20;9:424. <https://doi.org/10.3389/fpsyg.2018.00424>
- Morgantini, L. A., Naha, U., Wang, H., Francavilla, S., Acar, O., Flores, J. M., et al (2020). Factors contributing to healthcare professional burnout during the COVID-19 pandemic: a rapid turnaround global survey. *PLoS ONE*, 15(9):e0238217. <https://doi.org/10.1371/journal.pone.0238217>.
- Nazik, F., Yilmaz, E., & Tatli, H. (2018). Burnout in health sector: Sample of public hospital. *Medicine Science*, 7(4):821-5. <https://doi.org/10.5455/medscience.2018.07.8879>.

Neumann, J. L., Mau, L. W., Virani, S., Denzen, E. M., Boyle, D. A., Boyle, N. J., et al (2018). Burnout, moral distress, work-life balance, and career satisfaction among hematopoietic cell transplantation professionals. *Biol Blood Marrow Transpl*, 24(4):849–60.

New Straight Times (2021). Dr Noor Hisham: MHPSS is here to help frontliners, healthcare workers. *New Straight Times*. Retrieved from: <https://www.nst.com.my/news/nation/2021/01/659490/dr-noor-hisham-mhpss-here-help-frontliners-healthcare-workers>

Nieuwenhuijsen, K., Bruinvels, D., Frings-Dresen, M. (2010). Psychosocial work environment and stress-related disorders, a systematic review. *Occup Med*, 60:277–86.

Niraula, R., Ramachandran, A., & Devkota, A. (2020). Multiple Role of Pharmacist to Tackle Over Covid-19 : Frontline Healthcare Professionals. *Acta Scientific Pharmaceutical Sciences*, 4(10), 8–11.

Olanrewaju, A. S., & Chineye, O. J. (2015). Gender differences in burnout among health workers in the Ekiti State University Teaching Hospital Ado-Ekiti. *Int. J. Soc. Behavioural Sci*, 1(6):112-121. <http://www.academeresearchjournals.org/journal/ ijsbs>.

Oliveira, A. M., Silva, M. T., Galvão T. F., & Lopes, L. C. (2018). The relationship between job satisfaction, burnout syndrome and depressive symptoms. An analysis of professionals in a teaching hospital in Brazil. *Medicine (Baltimore)*. 97(49):e13364. doi: 10.1097/MD.0000000000013364.

Padgett, E. H. & Grantner, G. R. (2020). Pharmacist Burnout and Stress. *US Pharm*:45(5) HS2-HS-10

Parsian, N. & Dunning, T. (2009). Developing and Validating a Questionnaire to Measure Spirituality: A Psychometric Process. *Global Journal of Health Science*, 1(1), 2–11.

Patel, S. K., Kelm, M. J., Bush, P. W., Lee, H. J., Ball, A. M., (2021). Prevalence and risk factors of burnout in community pharmacists. *J Am Pharm Assoc*, 61(2):145-150. doi: 10.1016/j.japh.2020.09.022.

Peterson, U. (2008). *Stress And Burnout In Healthcare Workers*. Karolinska Institutet, Department of Clinical Neuroscience.

Pharmaceutical Services Program. (2014). Retrieved from: <https://www.pharmacy.gov.my/v2/en/services>

Pharmaceutical Services Program. (2021). Retrieved from: <https://www.pharmacy.gov.my/v2/en/content/pharmacy-board.html>

Pharmacy Program Annual Report. (2019). Retrieved from:

<https://www.pharmacy.gov.my/v2/en/documents/annual-report-and-statistics-pharmaceutical-services-programme.html>

Pharmacy Program Statistics Report. (2019). Retrieved from:

<https://www.pharmacy.gov.my/v2/en/documents/annual-report-and-statistics-pharmaceutical-services-programme.html>

Protano, C., Sio, S. De, Cammalleri, V., Pocino, R. N., Murano, S., Perri, R., et al. (2019). A Cross-Sectional Study on Prevalence and Predictors of Burnout among a Sample of Pharmacists Employed in Pharmacies in Central Italy. *BioMed Research International*, 8 pages. <https://doi.org/10.1155/2019/8590430>

Rhodes, L. A., Williams, D. M., Marciniak, M. W., Weber, D. J. (2017). Community pharmacists as vaccine providers. *Int J Health Governance*, 22:167–82.

Roberts, D. L., Cannon, K. J., Wellik, K. E. (2013). Burnout in inpatient-based versus outpatient-based physicians: a systematic review and meta-analysis. *J Hosp Med*, 8(11):653–64. [10.1002/jhm.2093](https://doi.org/10.1002/jhm.2093)

Rosenberg, M. (1965). *Society and the adolescent self-image*. Princeton, NJ: Princeton University Press. Available from: https://www.academia.edu/19813736/Rosenberg_M_Society_and_the_adolescent_self_image_Princeton_NJ_Princeton_University_Press_1965_326_p

Rosenberg, M. (1989). *Society and the adolescent self-image*. Revised edition. Middletown, CT: Wesleyan University Press.

Roslan, N. S., Yusoff, M. S. B., Asrenee, A. R., & Morgan, K. (2021). Burnout Prevalence and Its Associated Factors among Malaysian Healthcare Workers during COVID-19 Pandemic: An Embedded Mixed-Method Study. *Healthcare*, 9, 90. <http://doi.org/10.3390/healthcare9010090>

Rothmann, S., & Malan, M. (2011). Work-related well-being of South African hospital pharmacists. *SA Journal of Industrial Psychology*, 37(1),1–11. <https://doi.org/10.4102/sajip.v37i1.895>

Rudman, A., Gustavsson, J. P. (2012). Burnout during nursing education predicts lower occupational preparedness and future clinical performance: A longitudinal study. *Int J Nurs Stud*, 49(8):988-1001. doi: [10.1016/j.ijnurstu.2012.03.010](https://doi.org/10.1016/j.ijnurstu.2012.03.010).

Sacre, H., Obeid, S., Choueiry, G., Hobeika, E., Farah, R., Hajj, A., Akel, M., Hallit, S., Salameh, P. (2019). Factors associated with quality of life among community pharmacists in Lebanon: results of a cross-sectional study. *Pharmacy Practice*;17(4):1613.

Salanova, M., Llorens, S. (2008). Current state of research on burnout and future

- challenges. *Pap Psicol*, 29(1):59–67.
- Saligerova, M., Kolar, J. (2017). The extent of the burnout syndrome among pharmacists: partial study. *Ceska Slov Farm*, 66:107–11.
- Sataloff, R. T., & Vontela, S. (2021). Response Rates in Survey Research. *Journal of Voice*, 35 (5). doi: <https://doi.org/10.1016/j.jvoice.2020.12.043>
- Schadenhofer, P., Kundi, M., Abrahamian, H., Stummer, H., & Kautzky-Willer, A. (2018). Influence of gender, working field and psychosocial factors on the vulnerability for burnout in mental hospital staff: results of an Austrian cross-sectional study. *Scand J Caring Sci*, 32(1):335-345. doi: 10.1111/scs.12467.
- Schaufeli, W. B., Maslach, C. (2017). *Professional burnout: Recent developments in theory and research*. 1st Edition. Routledge.
- Selamu, M., Thornicroft, G., Fekadu, A., & Hanlon, C. (2017). Conceptualisation of job-related wellbeing, stress and burnout among healthcare workers in rural Ethiopia: a qualitative study. *BMC Health Serv Res*, 17, 412. <https://doi.org/10.1186/s12913-017-2370-5>
- Selangor State Health Department. (2016). Retrieved from: <http://www.jknselangor.moh.gov.my/index.php>
- Selic, P., Stegne-Ignjatovic, T., klemenc-ketis, Z. (2012). Burnout among Slovenian family medicine trainees: A cross-sectional study. *ZdravVestn*, 81(3). Available from: <https://vestnik.szd.si/index.php/ZdravVest/article/view/567>
- Siau, C. S., Wee, L. H., Ibrahim, N., Visvalingam, U., Ling Yeap, L., Yeoh, S. H., et al (2018). Predicting burnout and psychological distress risks of hospital healthcare workers. *Malaysian Journal of Public Health Medicine*, (Specialissue1), 125–136.
- Spector, P. (1985). Measurement of human service staff satisfaction: Development of the job satisfaction survey. *American Journal of Community Psychology*, 13(6):693-713.
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe B (2006). A Brief Measure for Assessing Generalized Anxiety Disorder. *Arch Intern Med*, 166(10):1092-7. doi: 10.1001/archinte.166.10.1092.
- Standards on Approval and Recognition of Pharmacy Programme, 2018. Retrieved from: <https://www.pharmacy.gov.my/v2/sites/default/files/document-upload/standards-approval-and-recognition-pharmacy-programme-2018.pdf>
- Stanetić, K., Tesanovic, G. (2013). Influence of Age and Length of Service on The Level of Stress and Burnout Syndrome. *Med Pregl*, LXVI (3-4): 153-

- Stafford-Brown, J., Pakenham, K. I. (2012). The effectiveness of an ACT informed intervention for managing stress and improving therapist qualities in clinical psychology trainees. *J. Clin. Psychol*, 68, 513–592.
- Stein, C., Sibanda, T. (2016). Burnout among paramedic students at a university in Johannesburg, South Africa. *Afr J Health Professions Educ*, 8(2):193-195. doi:10.7196/ AJHPE.2016.v8i2.626
- Steyerberg, E. (2008). *Clinical prediction models: a practical approach to development, validation, and updating*. Springer Science & Business Media, LLC.
- Tan, B. Y. Q., Kanneganti, A., Lim, L. J. H., Tan, M., & Chua, Y. X. (2020). Burnout and Associated Factors Among Health Care Workers in Singapore During the COVID-19 Pandemic. *Journal of the American Medical Directors Association*, 21(12), 1751-1758.e5. <https://doi.org/10.1016/j.jamda.2020.09.03>
- Tan, Y. Z., Chong, J. J., Chew, L. S. T., Tan, K. H., Wang, A. (2021). Burnout and resilience among pharmacists: A Singapore study. *Journal of the American College of Clinical Pharmacy*, 10.1002/jac5.1551.
- Teles, M. A. B., Barbosa, M. R., Vargas, A. M. D. (2014). Psychosocial work conditions and quality of life among primary health care employees: a cross sectional study. *Health Qual Life Outcomes*, 12:72–172.
- Ting, C. H., Chia, C. W. X., Chee, K. S., Ming, L. H., Lin, N. Z., & Ahmad, K. (2018). Depression and anxiety among provisionally registered pharmacists (PRP): a cross sectional study. *Sarawak Journal of Pharmacy*, 1;1-16.
- van Dam, A. (2016). Subgroup Analysis in Burnout: Relations Between Fatigue, Anxiety, and Depression. *Front Psychol*, 7:90. <https://doi.org/10.3389/fpsyg.2016.00090>
- Wang, H., Jin, Y., Wang, D., Zhao, S., Sang, X., & Yuan, B. (2020). Job satisfaction, burnout, and turnover intention among primary care providers in rural China: results from structural equation modeling. *BMC Family Practice*, 21:12 1–10.
- WHO. (1994). *The Role of the Pharmacist in the Health Care System*. World Health Organization. Retrieved from: <http://apps.who.int/medicinedocs/en/d/Jh2995e/>
- WHO. (2006). *The World Health Report*. World Health Organization. Retrieved from: http://www.who.int/whr/2006/whr06_en.pdf
- WHO. (2010). *Health Workforce*. World Health Organization. Retrieved from: <http://www.who.int/healthinfo/systems/>

- WHO. (2019). International Statistical Classification of Diseases and Related Health Problems, 11th ed. World Health Organization. Retrieved from: https://www.who.int/mental_health/evidence/burn-out/en/
- WHO. (2021). Depression. World Health Organization. Retrieved July 01, 2021, from <http://www.who.int/topics/depression/en/>
- Williams, E., Martin, S. L., Fabrikant, A., Wang, A., Pojasek, M. (2018). Rates of depressive symptoms among pharmacy residents. *American Journal of Health-System Pharmacy*, 75(5):292–297.
- Wisetborisut, A., Angkurawaranon, C., Jiraporncharoen, W., Uaphanthasath, R., & Wiwatanadate, P. (2014). Shift work and burnout among health care workers. *Occup Med (Lond)*, 64(4):279-86. doi: 10.1093/occmed/kqu009.
- Wurm, W., Vogel, K., Holl, A., Ebner, C., Bayer, D., Mörkl, S., et al. (2016). Depression-Burnout Overlap in Physicians. *PloS One*; 11(3): e0149913. <https://doi.org/10.1371/journal.pone.0149913>
- Yang, S., Meredith, P., & Khan, A. (2015). Stress and burnout among healthcare professionals working in a mental health setting in Singapore. *Asian Journal of Psychiatry*, 15, 15–20. <https://doi.org/10.1016/j.ajp.2015.04.005>
- Yeh, Y., Lin, B. Y., & Lin, W. (2010). Job Stress: Its Relationship to Hospital Pharmacists' Insomnia and Work Outcomes. *Int J Behav Med*, 17(2):143–53. <https://doi.org/10.1007/s12529-009-9066-0>
- Youssef, D., Youssef, J., Hassan, H., Abou-Abbas, L. (2021). Prevalence and risk factors of burnout among Lebanese community pharmacists in the era of COVID-19 pandemic: results from the first national cross-sectional survey. *J Pharm Policy Pract*, 14(1):111. doi: 10.1186/s40545-021-00393-w.