

PROPOSAL

The Effectiveness of the Medicorp House Officer (HO) Preparatory Course for Medical Graduates on Confidence, Readiness, and Psychological Well-Being: A Quasi-Experimental Study

Intended Protocol Registry: NIH

Dr. Aneesa Abdul Rashid

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Funding:

No	Funders	Funds	Contact Information	
1	Medigrow (Medicorp Resources)	Venue, Trainers, Equipments	No 44, Jalan Bidara 3/2, Off Jalan Selayang Jaya, Batu Caves, 68100, Selangor	
2	University Putra Malaysia (UPM) University Community Transformation Centre (UCTC) Knowledge Transfer Grant Scheme (KTGS)	Research grant	Pusat Transformasi Komuniti Universiti (UCTC UPM), Bangunan Jaringan Industri dan Masyarakat, Universiti Putra Malaysia, 43400 UPM Serdang Selangor Darul Ehsan	decision to submit the report for publication, authority over study activities

Role and Responsibilities:

No	Name	Affiliation	Roles
1	Dr Aneesa Abdul Rashid	Universiti Putra Malaysia (UPM)	Principal Investigator: <i>study design; collection, management, analysis, and interpretation of data; writing of the report</i>
2	Dr Iliana Mohamad	Medigrow (Medicorp Resources)	Industry (Training & Education) <i>study design; collection, management</i>
3	Assoc Prof Dr Sazlina Shariff Ghazali	Universiti Putra Malaysia (UPM)	Co researcher <i>study design; collection, management, analysis, and interpretation of data; writing of the report</i>
4	Dr Dalila Roslan	Islamic Medical Association of Malaysia (IMAM)	Co researcher <i>collection, management, analysis, and interpretation of data</i>
5	Dr Maliza Mawardi	Universiti Putra Malaysia (UPM)	Co researcher <i>collection, management, analysis, and interpretation of data</i>
6	Dr Husna Musa		

INTRODUCTION

Background

After completion of 5 years of medical school training, the next step of becoming a House Officer (HO) is said to be associated with high levels of stress. It has been associated with mental health problems amongst HOs and sometimes quitting the medical line altogether. In Malaysia, the number of HOs not completing housemanship training within the allocated time is slowly declining from 86.4% (2009) to 58.8% (2012) (Lim, 2017). The dropout rate is said to be increasing yearly. This causes a lot of constraints on the HO, their family, sponsors, patients and also the country. Amongst the reason for stress is the feeling of incompetency or “fear of making mistakes”. Other work-related issues include workload, time management, financial, colleague and superior related issues. Medicorp is a company that specializes in training for junior doctors and has come up with a module to help medical graduates cope with these issues. The module is a 3-day-course named the HO Preparatory Course. It was initially the brainchild of the Islamic Medical Association of Malaysia (IMAM) but was later privatized to accommodate the demand and the running of the module and courses. The module has been re-evaluated through feedback of participants and trainers to cater to the needs and wants of the newly graduate; be it local or overseas. Therefore, we would like to assess whether this intervention module is effective in addressing HO stress, consequently reducing the risk of drop out and extension in HO training

Problem Statement

Housemanship is the first 2 years of a Malaysian doctor’s career. It is associated with various causes of psychological stress (Vivekanandan et al., 2016; Yusoff, Tan, & Esa, 2011) . The top cause of stressors found among House Officers (HO) is fear of making mistakes (Al-Dubai, Ganasegeran, Perianayagam, & Rampal, 2013; Yusoff et al., 2011). Time management-workload pressure, work colleague and financial issues are the other top causes of stress. (Al-Dubai et al., 2013; Yusoff et al., 2011). A more recent study suggests poor work-social life balance as a major cause of stress amongst housemen (Vivekanandan et al., 2016).

According to a recent report by the Penang Institute; a think-tank funded by the Penang state government, the percentage of HOs completing their training in Malaysia within the allocated time of 2 years has declined from 86.4% in 2009 to only 58.8% in 2012 (Lim, 2017; Penang Institute, 2018). The dropout rate, which is defined as HOs not completing their training within 5 years is said to be slowly increasing from 3.7-4.8% per batch year (Lim, 2017). In 2016 1.2% were either terminated or quit due to the inability to cope with stress (Lim, 2017).

The House Officer's Preparatory Course was initially organized by the Islamic Medical Association of Malaysia (IMAM) in early 2011 to address the mentioned issues. Since then, it has evolved and has been privatized to Medicorp, a company that specializes in junior doctor training. The module has been further refined through feedback from participants, speakers and organisers who still remain to be active IMAM members, some of them UPM lecturers. There is one main HO Preparatory Course, and also small follow up courses that covers other topics in depth.

Medicorp takes into account that peer training is one of the top learning methods preferred by junior doctors (Wiggins, Haldar, & Biswas, 2013) . Hence this training course relies heavily on volunteers mainly feedback from participants and its alumni. To date there has been more than 20 courses with more than 1500 participants who have benefited from this course. The courses are now run in 3 different states based on demand, Selangor, Sabah and Kelantan. They are followed up even after the course via social media networks and whatsapp groups for further support.

Housemanship preparatory course training is slowly gaining attention here in Malaysia. Prior to this it was very limited. The modules in the training sessions vary with irregular times Research done on these training modules are also very limited if not done at all.

Significance of Study

We aim to evaluate this peer-lead course to see its effect on medical graduates' confidence, readiness, and psychological wellbeing to better prepare them for housemanship training. With the improvement of these factors it is hoped that this will reduce the level of stress amongst the junior doctors' just starting work to give them a head start to become a more prepared, confident and motivated doctor and will hopefully reduce rates of extension and dropouts.

Objectives

General

To determine the effectiveness of Medicorp's House Officer (HO) Preparatory Course for medical graduates in confidence, readiness, and psychological well-being to work as a HO.

Specific

1. To determine the socio-demographic and past clinical experience of participants attending Medicorp's HO Preparatory Course
2. To determine the level of confidence, readiness, and psychological well-being of participants to work as a HO before attending the Medicorp HO Preparatory course
3. To determine the level of confidence and readiness of participants to work as a HO after immediately attending the Medicorp HO Preparatory course
4. To determine the level of confidence, readiness and psychological well-being of participants to work after 1 month working as a HO
5. To determine the effectiveness of the Medicorp HO Preparatory course on the level of confidence, readiness and psychological well-being before attending the course and after 1 month working as a HO
6. To determine the determine the effectiveness of the Medicorp HO Preparatory course on the level of confidence and readiness immediately after attending the course

Study Hypothesis

1. The HO Preparatory Course is an effective module in improving the confidence level, readiness and psychological well-being of participants in preparing them for HO-ship in Malaysia
2. The level of confidence, readiness, and psychological well-being of participants to work as a HO before attending the Medicorp HO Preparatory course is low
3. There is a high level of confidence and readiness of participants to work as a HO after attending the Medicorp HO Preparatory
4. There is a high level of confidence, readiness and psychological well-being of participants to work after 1 month working as a HO

LITERATURE REVIEW

Current Housemanship (HO) Scenario Worldwide and in Malaysia

Reduced psychological well-being amongst House Officers (HOs) is a known worldwide issue. For example in Norway, 11% of house officers are reported to have mental health problems needing treatment. (Tyssen, Vaglum, Gronvold, & Ekeberg, 2000). In the UK (Midlands), 46% is said to have clinical depression (J Firth-Cozens, 1990). The numbers don't run far amongst local Malaysian studies where it is said to be at a range of around 31-58% reported on various psychological conditions.

For example 31% of HOs are reported to be distressed, 36.6% indicates a high level of emotional burn out and the level of stress to be 34% in Kuala Lumpur and as high as 58% in Kota Kinabalu. (Al-Dubai et al., 2013; Shahrudin et al., 2016; Yusoff et al., 2011)

There many consequences of this psychological impact towards the HOs themselves, the healthcare system and towards the nation as a whole. Among the direct impact of stressed HOs is the number of them completing training within the allocate two years has been decreasing from 86.4% in 2009 to only 58.8% in 2012.(Lim, 2017) The dropout rate, which is defined as HOs not completing their training within 5 years is said to be slowly increasing from 3.7-4.8% per batch year.

A high level of stress is related is likely to affect thoughts of quitting HOship by up to three times, as evidenced in 2016 where 1.2% of HOs were either terminated or quit due to the inability to cope with stress. (Lim, 2017; Shahrudin et al., 2016)

Causes of Stress amongst HOs

Many studies have linked the causes of HO stress to be related with performance issues. This can be related to dealing with patient demands, intensity of the workload, mental strain and feeling

overworked (J Firth-Cozens, 1990; Tyssen et al., 2000; Williams, Dale, Glucksman, & Wellesley, 1997; Yusoff et al., 2011).

One of the contributing factors that cause this burden is the lack of confidence in performing. This has been described by participants of these studies to be “coping with diagnostic uncertainty”, “perceived lack of skills”, ‘fear of making mistakes’, and feeling “insecure”. (Al-Dubai et al., 2013; Tyssen et al., 2000; Williams et al., 1997; Yusoff et al., 2011)

A qualitative study done amongst nursing students with regards to their clinical practice highlighted the feeling of anxiety as a result of feeling incompetent and lack of skills and knowledge (Sharif & Masoumi, 2012). Another study done on Senior House Officers in the UK also derived that confidence levels are linked to psychological distress (Williams, Dale, Glucksman, & Wellesley, 1997). Although these two studies were not done among House Officers specifically, it highlights the psychological impact of lack of confidence, skills and knowledge in the clinical setting.

Other factors said to be a contributor to this issue is poor social life and work balance including time management, interpersonal skills, and factors related to financial issues. (Al-Dubai et al., 2013; Yusoff et al., 2011)

Impact of Stressed HOs

Apart from the impact of prolonged and termination of training as mentioned earlier, there is a huge economic implication related to stressed HOs. As we know, training of doctors cost around RM500,000 or even more per person. Hence this leaves a huge economic burden to our nation.

(afterschool.my, 2016; The Straits Times, 2017)

Apart from that, stressed HOs can lead to substandard quality of care and patient safety issues as high levels of stress and depression is associated with lower standard of care. (J Firth-Cozens, 1990; Jenny Firth-Cozens & Greenhalgh, 1997)

The Housemanship (HO) Preparatory Module for Medical Graduates

Currently, there are HO Preparatory courses offered by independent bodies to address the above mentioned issues.(The Star, 2017) Medicorp offers regular training 10 times per year with 50-100 participants each course for the past 3 years.

Medicorp takes into account that peer training is one of the top learning methods preferred by junior doctors, apart from textbook and online materials (Wiggins et al., 2013) . Hence, this training course relies heavily on volunteers mainly feedback from participants and its alumni. To date there has been more than 20 courses with more than 1500 participants who have benefited from this course. The courses are now run in 3 different states based on demand, Selangor, Sabah and Kelantan. They are followed up even after the course via social media networks and whatsapp groups for further support.

Preparatory housemanship training is very scarce here in Malaysia, especially those that are aimed at helping housemen be more functioning, motivated and be familiar with the system. Research done on these training modules are also very limited if not done at all.

We aim to evaluate this peer-lead course to see its effect on medical graduates ‘confidence, readiness, and psychological wellbeing to better prepare them for housemanship training.

With the improvement of these factors it is hoped that this will reduce the level of stress amongst the junior doctors just starting work to give them a head start to become a more motivated doctor. The results of this course will further help to refine this module to be a more comprehensive and effective module and create an assessment tool for future training modules.

Methodology

Study Setting:

This study will be conducted in International Youth Centre, Cheras. It has been the main focal point of where most of the courses have been conducted. It is within easy reach and centrally located near Hospital UKM. Many participants will come from all around Malaysia to attend. The centre is equipped with a lecture hall and boarding for the participants.

Study Design:

This is a pre-post quasi-experimental study that will be conducted over 12 months duration.

Participants in this study will undergo a House Officer (HO) preparatory course. The level of confidence, readiness and psychological wellbeing will be evaluated. There will be three assessment time points: at baseline (before the course), immediately after the course (only for level of confidence and readiness) and 1 month after working as HO. This study is unable to have a control because of constraints in resources.

Study Duration:

This study will start from April 2018 – March 2019

Sampling of participants:

Recruitment

Participants who attend the Medicorp HO Preparatory Course from April 2018 –March 2019 will be recruited into this study as the sampling frame. The eligibility criteria are based on the following:

Inclusion Criteria

1. Participants that have registered to attend the Medicorp HO Preparatory Course

Exclusion Criteria

1. Participants declared to have psychiatric illness
2. Participants who have not completed a medical degree (medical students)
3. Participants already working as a HO

The sampling methods employed in this study will be taking all participants who fulfil the eligibility criteria and agree to participate in this study.

Intervention:

The intervention in this study will be the Medicorp HO preparatory course which comprises of a 3 day training touching on aspects of HO training that is needed practically for a HO to function. The training will touch on the nature of the HO job, explaining about technical details such as the shift and on call system. The tagging period, and assessments that HOs need to undergo during their training. They will be guided on how to clerk, review and present common as well as emergency cases. Other aspects involved in clerking such as common forms used in the wards and also how to refer cases is also discussed. Apart from that, soft skills such as communication among staff, financial, balancing social life and future career planning is incorporated in the training. There are hands on training for participants for common procedures such as continuous bladder drainage insertion and venepuncture. The trainers are specialists, specialists in training, medical officers, and also house officers who come to share their experience. Medicorp encourages their alumni to be part of their training program. This module will be held on a 1-2 monthly basis. The Module Content is moderated by Medicorp based on discussions with board of directors, advisors and feedback from participants. The training program are done as lecture, tutorial and hands on session. Before commencing the course, participants will be included in a whatsapp group, for easier content sharing and updates of the course. They will continue this networking even after completion of this course. They will be also be guided in the online applications of their job through this application and also through Facebook. During the commencement of their job, Medicorp will use their database to guide them into different whatsapp groups according to their place of work for additional support.

Study outcome measures:

1. Primary outcome

a. Level of confidence:

This will be adapted from the IMU Student Competency Survey (Appendix 2) as there are no published studies on the confidence level of medical graduates before beginning HO-ship. The questionnaire comprises of 5 sections. The first 4 sections asses on generic skills, practical tasks, soft skills and their confidence as a whole, using a Likert scale assessment. Scoring is a mean score of 1-5 and the higher the

score, the higher the confidence. The last section asks on the one daunting aspect of being a HO out of a list of 7 things, this section is descriptive.

2. Secondary outcome

a. Readiness

This is also adapted from the IMU competency survey and is asked on a likert scale of 1 to 5 for their level of readiness. It is assessed after the confidence section. The higher the score, the higher the level of readiness.

b. Psychological wellbeing

This is using the Depression Anxiety Stress Scale (DASS): This questionnaire is used to assess Depression, Anxiety and Stress. It uses a likert scale. The scores indicate normal, mild, moderate, severe and extremely severe for each of the domains. The higher the scores, indicates the more severe the conditions.

Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. The depression scale assesses dysphoria, hopelessness, devaluation of life, self-deprecation, lack of interest / involvement, anhedonia and inertia. The anxiety scale assesses autonomic arousal, skeletal muscle effects, situational anxiety, and subjective experience of anxious affect. The stress scale is sensitive to levels of chronic non-specific arousal. It assesses difficulty relaxing, nervous arousal, and being easily upset / agitated, irritable / over-reactive and impatient. Scores for depression, anxiety and stress are calculated by summing the scores for the relevant items.

The DASS-21 is based on a dimensional rather than a categorical conception of psychological disorder. The assumption on which the DASS-21 development was based (and which was confirmed by the research data) is that the differences between the depression, anxiety and the stress experienced by normal subjects and clinical populations are essentially differences of degree. The DASS-21 therefore has no direct implications for the allocation of patients to discrete diagnostic categories postulated in classificatory systems such as the DSM and ICD. (Lovibond & Lovibond, 1995)

Sample size

Sample size was calculated using G*Power 3.1 sample size calculator software.

Based on reports by confidence score from a study analysing pre and post emergency department posting in junior doctors was used. The mean overall confidence score

was 56.475(24.67) at the end of month 1 and 62.775(28.69) at the end of month 4(Williams et al., 1997). The estimated sample size was 208 participants after accounting for power of 80%, significance level of 0.05% and 30% attrition.

Instruments & Data Collection

Intervention: The Medicorp HO Preparatory Module

Tools for assessment:

1. Baseline questionnaire

The study instrument will be a set of questionnaire that will be divided into sections A-E.

The English versions will be used.

a) Socio-demographic data :

This will include certain details of participants such as:

- Age
- Sex
- Religion
- Ethnicity
- Year of graduation
- University of Graduation
- Marital status
- Place of work (evaluation during 1 month post HO-ship)

a) **Clinical Experience:**

This will be adapted from the IMU Student Competency Survey. This will show participants past clinical experience on common procedures during their undergraduate years.

b) **Confidence level:**

Adapted from the IMU student competency questionnaire as explained in study outcome measures

c) **Readiness :**

Adapted from the IMU student competency questionnaire as explained in study outcome measures

d) **Psychological well –being :**

DASS as explained in study outcome measures

2. Post course questionnaire (immediate)

- a) Level of confidence
- b) Readiness

3. Case report form

Conducted via telephone call at 1 month after starting work as HO

Content will include:

- a) Level of confidence
- b) Readiness
- c) DASS
- d) Work place information: which hospital and posting
- e) Any suggestions to improve the course based on your current working experience?

All the questionnaires will be pilot tested by testing this on 30 medical graduates before using the questionnaire.

Data collection

A pre-tested self-administered questionnaire which includes baseline socio-demography, adaptation of the IMU Student Competency Survey, and the Depression Anxiety Stress Scale will be used. 1 month follow-up will be done by telephone. After the participants have completed the course, their level of readiness and confidence will again be assessed via a self-administered questionnaire. This will be done on the last day of the course.

The participants will later be followed up 1 month after they have been working as a HO in their respective hospitals. The organisers will keep track of placements of all participants via social media applications as part of the course is still maintaining connections and informal training after the course has ended and as participants start the process of job application and working.

Ethical considerations

This study's approval for ethical clearance will be obtained from Jawatan Kuasa Etika Perubatan (JKEP) University Putra Malaysia (UPM) and National Medical Research Register (NMRR); Medical Research and Ethics Committee (MREC) as the participants will be working in Ministry of Health facilities during the 1 month follow up. This study will also be registered in the National Institute of Health (NIH) as a trail registration.

Informed consent will be obtained from each study participant and they will be told the right not to respond to the questions they don't want to respond to or to withdraw from the study at any time. All data obtained will be kept confidentially and for research purposes only.

The benefits of the study includes assessing issues in relations to HO wellbeing and to assess what is needed in training a functional HO. The potential risk, discomforts and inconvenience is almost none. However, should the DASS score be suggestive of depression or anxiety, team members of the research team will refer the participant appropriately. Should participants choose to withdraw from study, they will be allowed to do so.

Data Analysis

The data will be analysed using IBM Social Package for Social Science (SPSS) version 24. A descriptive analysis of the demographic characteristics of the participants, clinical experience and baseline level of confidence, readiness and psychological wellbeing will be reported using means and standard deviations (SD) or median and inter-quartile range (IQR) for continuous variables (depending on the data distribution) and as frequencies and percentages for categorical data. An analysis to compare between participants who completed and withdrew from the study will be made using Chi-square or Exact test (for unbalanced data) for categorical variables and independent t-test for continuous data.

A repeated measures ANOVA will be conducted to determine the effectiveness of the intervention within the groups across the study periods (baseline, immediately after intervention and at 1 month after working). Controlling for baseline measures will be done to determine the change over time on the measured outcomes (level of confidence, readiness and psychological wellbeing). All analyses conducted are two-tailed with significant level set at p value <0.05.

Operational Definitions of terms

1. Medical Graduates/Participants – Those that have obtained a medical degree be it MD, MBBS, BAO, MBBS or the same level
2. Socio-demography – the components of description of a population
 - a. Age – based on the year a person was born
 - b. Sex- male or female
 - c. Marital Status – single, married, separated or divorced
 - d. Ethnicity – background of a person's race
 - e. Religion – the religion based on identification card (I.C)
 - f. Year of graduation – year they receive their certificates of qualification
 - g. University- institution of higher learning they graduated from
 - h. Confidence –a feeling of self-assurance arising from an appreciation of one's own abilities or qualities

- i. Readiness - the state of being fully prepared for something.
- j. Psychosocial well-being - the state of, affecting, or arising in the mind; related to the mental and emotional state of a person.

Expected Outcomes

1. Novel theories/New findings/Knowledge

1. A Questionnaire to assess HO's level of confidence, readiness and psychological wellbeing to begin work
2. A module for intervention for medical graduates with low levels of, confidence, readiness and psychological wellbeing to begin work

2. Research Publications

1. The Effectiveness of the Medicorp House Officer (HO) Preparatory Course for Medical Graduates on Confidence, Readiness and Psychological Well-Being: A Protocol Study (2020)
2. The Effectiveness of the Medicorp House Officer (HO) Preparatory Course for Medical Graduates on Confidence, Readiness and Psychological Well-Being: A Quasi-Experimental Study (2020)

3. Specific or Potential Application

1. A questionnaire screening tool for medical graduates that may need intervention before commencing HOship
2. An intervention module for medical graduates that have low levels of confidence, readiness and psychological wellbeing prior to beginning work

4. Impact on Society, Economy and Nation

1. A supplementary, comprehensive, peer and research led module for medical graduates to prepare themselves to be functional and motivated HOs
2. A questionnaire to assess medical graduates' confidence, readiness & psychological wellbeing to begin work as HOs.

Budget

No.	Budget details:	Amount requested by applicant:
		KTGS JINM grant:
1.	Vot 11000 - Wages and allowances	-
2.	Vot 21000 - Travels and Transports Please provide a detailed breakdown	To course venue- IYC Cheras; 0.7c/km x 16km x 2ways x 7 courses = RM156.80 To present conference paper: RM 500
3.	Vot 23000 - Communications and Utilities Please provide a detailed breakdown	-
4.	Vot 24000 - Rentals Please provide a detailed breakdown	-
5.	Vot 27000 - Supplies and project materials Please provide a detailed breakdown	-
6.	Vot 29000 - Professional services Please provide a detailed breakdown	Enumerator: 260 participants x 3 times questionnaires x RM10/questionnaire = RM7800 Tokens for participants' time (answering pre, post and 1 month post questionnaires) 260 participants x RM50/participants = RM13, 000 conference to present study = RM 2000

7.	<i>Vot 35000 - Accessories, equipment and software</i> <i>Please provide a detailed breakdown</i>	A4 paper = RM 300 Printer Cartridge (2) = RM600 Telephone calls = RM150
	<i>Total amount:</i>	RM 24, 506.80

Gantt chart

The activities of the research will be described in the Gantt chart as below

Prepared by

Task/month	2018							2019						
	M	A	M	J	J	A	S	O	N	D	J	F	M	A
1. Literature review & development of study protocol														
2. Development of questionnaires														
3. Ethics approval and permission from authority														
4. Validation of questionnaire														
5. Data collection														
6. Data cleaning, entry and analysis														
7. Write up and finalisation														

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References

- afterschool.my. (2016). Cost of studying medicine in Malaysia. Retrieved September 26, 2017, from <http://afterschool.my/articles/cost-of-studying-medicine-in-malaysia>
- Al-Dubai, S. A. R., Ganasegeran, K., Perianayagam, W., & Rampal, K. G. (2013). Emotional burnout, perceived sources of job stress, professional fulfillment, and engagement among medical residents in Malaysia. *The Scientific World Journal*, 2013. <https://doi.org/10.1155/2013/137620>
- Firth-Cozens, J. (1990). Source of stress in women junior house officers. *BMJ (Clinical Research Ed.)*, 301(6743), 89–91. <https://doi.org/10.1136/bmj.301.6743.89>
- Firth-Cozens, J., & Greenhalgh, J. (1997). Doctors' perceptions of the links between stress and lowered clinical care. *Social Science and Medicine*, 44(7), 1017–1022. [https://doi.org/10.1016/S0277-9536\(96\)00227-4](https://doi.org/10.1016/S0277-9536(96)00227-4)
- Lim, C. H. (2017). *Housemanship programme in Malaysia : Availability of positions and quality of training*.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335–343. [https://doi.org/10.1016/0005-7967\(94\)00075-U](https://doi.org/10.1016/0005-7967(94)00075-U)
- Penang Institute. (2018). About Penang Institute | Penang Institute. Retrieved March 26, 2018, from <http://penanginstitute.org/v3/aboutus/about-penang-institute>
- Shahrudin, S. A., Saseedaran, P., Salleh, A., Ahmad Azmi, C. A., Mohammad Alfaisal, N. H. I., Fuad, M. D. F., ... Abdullah, M. R. (2016). Prevalence and Risk Factors of Stress , Anxiety and Depression among House Officers in Kota. *Education in Medicine Journal*, 8(1), 31–40. <https://doi.org/10.5959/eimj.v8i1.398>
- The Star. (2017). Pre-housemanship courses give new docs a headstart - Education | The Star Online. Retrieved January 29, 2018, from <https://www.thestar.com.my/news/education/2017/10/22/prehousemanship-courses-give-new-docs-a-headstart/>
- The Straits Times. (2017). 1 in 5 trainee doctors quit in Malaysia, some become waiters instead, SE Asia News ; Top Stories - The Straits Times. *The Straits Times*. Retrieved from <http://www.straitstimes.com/asia/se-asia/1-in-5-trainee-doctors-quit-in-malaysia-some-become-waiters-instead>
- Tyssen, R., Vaglum, P., Gronvold, N. T., & Ekeberg, O. (2000). The impact of job stress and working conditions on mental health problems among junior house officers. A nationwide Norwegian prospective cohort study. *Medical Education*, 34(5), 374–384. <https://doi.org/10.1046/j.1365-2923.2000.00540.x>
- Vivekanandan, G., Thirupathy, U., Affan, M., Zamri, A. A., Ariffin, K., Asraff, A., & Sugnadan, S. (2016). Stress perceived by houseman in a hospital in northern Malaysia. *Medical Journal of Malaysia*, 71(1), 8–11.
- Wiggins, N., Haldar, S., & Biswas, S. (2013). How and Why Do Junior Doctors Study? What Materials Do They Use? *Journal of Biomedical Education*, 2013, 1–6. <https://doi.org/10.1155/2013/840812>
- Williams, S., Dale, J., Glucksman, E., & Wellesley, a. (1997). Senior house officers' work related stressors, psychological distress, and confidence in performing clinical tasks in accident and emergency: a questionnaire study. *BMJ (Clinical Research Ed.)*, 314(7082), 713–8. <https://doi.org/10.1136/bmj.314.7082.713>
- Yusoff, M. S. B., Tan, Y. J., & Esa, A. R. (2011). Stress, stressors and coping strategies among house officers in a Malaysian hospital. *ASEAN Journal of Psychiatry*, 12(August), 85–94.
- afterschool.my. (2016). Cost of studying medicine in Malaysia. Retrieved September 26, 2017, from <http://afterschool.my/articles/cost-of-studying-medicine-in-malaysia>
- Al-Dubai, S. A. R., Ganasegeran, K., Perianayagam, W., & Rampal, K. G. (2013). Emotional burnout, perceived sources of job stress, professional fulfillment, and engagement among medical residents in Malaysia. *The Scientific World Journal*, 2013. <https://doi.org/10.1155/2013/137620>
- Firth-Cozens, J. (1990). Source of stress in women junior house officers. *BMJ (Clinical Research Ed.)*, 301(6743), 89–91. <https://doi.org/10.1136/bmj.301.6743.89>
- Firth-Cozens, J., & Greenhalgh, J. (1997). Doctors' perceptions of the links between stress and

- lowered clinical care. *Social Science and Medicine*, 44(7), 1017–1022.
[https://doi.org/10.1016/S0277-9536\(96\)00227-4](https://doi.org/10.1016/S0277-9536(96)00227-4)
- Lim, C. H. (2017). *Housemanship programme in Malaysia : Availability of positions and quality of training*.
- Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, 33(3), 335–343. [https://doi.org/10.1016/0005-7967\(94\)00075-U](https://doi.org/10.1016/0005-7967(94)00075-U)
- Penang Institute. (2018). About Penang Institute | Penang Institute. Retrieved March 26, 2018, from <http://penanginstitute.org/v3/aboutus/about-penang-institute>
- Shahrudin, S. A., Saseedaran, P., Salleh, A., Ahmad Azmi, C. A., Mohammad Alfaisal, N. H. I., Fuad, M. D. F., ... Abdullah, M. R. (2016). Prevalence and Risk Factors of Stress , Anxiety and Depression among House Officers in Kota. *Education in Medicine Journal*, 8(1), 31–40.
<https://doi.org/10.5959/eimj.v8i1.398>
- The Star. (2017). Pre-housemanship courses give new docs a headstart - Education | The Star Online. Retrieved January 29, 2018, from <https://www.thestar.com.my/news/education/2017/10/22/prehousemanship-courses-give-new-docs-a-headstart/>
- The Straits Times. (2017). 1 in 5 trainee doctors quit in Malaysia, some become waiters instead, SE Asia News ; Top Stories - The Straits Times. *The Straits Times*. Retrieved from <http://www.straitstimes.com/asia/se-asia/1-in-5-trainee-doctors-quit-in-malaysia-some-become-waiters-instead>
- Tyssen, R., Vaglum, P., Gronvold, N. T., & Ekeberg, O. (2000). The impact of job stress and working conditions on mental health problems among junior house officers. A nationwide Norwegian prospective cohort study. *Medical Education*, 34(5), 374–384. <https://doi.org/10.1046/j.1365-2923.2000.00540.x>
- Vivekanandan, G., Thirupathy, U., Affan, M., Zamri, A. A., Ariffin, K., Asraff, A., & Sugnadan, S. (2016). Stress perceived by houseman in a hospital in northern Malaysia. *Medical Journal of Malaysia*, 71(1), 8–11.
- Wiggins, N., Haldar, S., & Biswas, S. (2013). How and Why Do Junior Doctors Study? What Materials Do They Use? *Journal of Biomedical Education*, 2013, 1–6.
<https://doi.org/10.1155/2013/840812>
- Williams, S., Dale, J., Glucksman, E., & Wellesley, a. (1997). Senior house officers' work related stressors, psychological distress, and confidence in performing clinical tasks in accident and emergency: a questionnaire study. *BMJ (Clinical Research Ed.)*, 314(7082), 713–8.
<https://doi.org/10.1136/bmj.314.7082.713>
- Yusoff, M. S. B., Tan, Y. J., & Esa, A. R. (2011). Stress, stressors and coping strategies among house officers in a Malaysian hospital. *ASEAN Journal of Psychiatry*, 12(August), 85–94.