

QUALITIES OF HOUSEMAN OFFICERS IN MALAYSIA

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ABSTRACT

Empathy is paramount in the health care setting, optimizing communication and rapport with patients. Therefore, given the importance of the empathy in the health care setting, this study was designed to measure empathy levels and self-esteem among houseman officers in Malaysia and to identify the factors associated with it. This cross sectional study was carried out among 250 houseman officers in Malaysia via online. Two different scales were used in order to measure this two criteria among houseman officers which are Jefferson scale of empathy (JSE) and Rosenberg self-esteem scale (RSES). Mean empathy score among the participants was 121.5440, with significantly higher score being reported by males than females ($p = 0.043$). On the other hand, the mean of self-esteem among the respondents was 35.39. Findings of mean of this study with first-year houseman officers in Malaysia compared to second-year houseman officers ($p = 0.588$). Chinese exhibiting significantly high empathy level with mean score of 128.4063 compared to other ethnics ($p = 0.031$). This findings showed that houseman officers with age of 27-28 have scored more with mean of 123.71 compared to other age groups. Significant correlation was found between empathy and gender, age, ethnicity and years of working. Overall, males and houseman officers of Chinese origin were more empathetic than females and housemen of other ethnic origins. First year houseman officers were more empathetic than the second year housemen. This necessitates the need for incorporating caregiving as an integral part of the clinical setting by stressing on doctor-patient relationship, which in turn could aid houseman officers become compassionate physicians.

Keywords: Houseman officers, empathy, self-esteem, Jefferson's Scale, Rosenberg's Scale.

INTRODUCTION

Background of the Problem

According to John W. Peabody, Jeff Luck, Peter Glassman, Sharad Jain, Joyce Hansen, Maureen Spell, Martin Lee, PhD, (2004), worldwide efforts are under way to improve the quality of clinical practice among houseman officers. Most quality measurement are poorly validated, expensive, and difficult to compare among sites. Based on this research, good quality is measured by the empathy level of the houseman officers, the factors affecting the empathy level and the self-esteem level of the houseman officers in Malaysia.

According to Jean Decety and Keith J. Yoder(2015), empathy is an innate ability to perceive and be sensitive to emotional states of others and to share feelings, reflecting the ability to put oneself in other people's place and to understand their feelings. Besides, based on Helena B. M. S. Paro, Paulo S. P. Silveira, Bruno Perotta, Silmar Gannam, Sylvia C. Enns, Renata R. B. Giaxa, 8 Rosuita F. Bonito, Milton A. Martins, and Patricia Z. Tempski (2014) empathy is an important component of medical professionalism and has been frequently associated with improvements in the health outcomes and quality of care in clinical practice. According to Muneer G.Babar, Hanan Omar, Lee P.Lim,Saad A.Khan,Shahid Mitha, Siti F.B.Ahmad, Syed S.Hasan (2013), it is one of the basic element of good doctor-patient relationship and is often considered as important attribute for professionals in health care. By referring to Glaser (2017) housemen who are able to establish good relationship with patients achieved better compliance. Moreover according to Suma Nair, Ranjitha S.Shetty, Swathi Guha, Zari Anjum, Asha Kamath, (2018) empathy being an integral components of quality of a houseman, this study was designed to measure empathy level among houseman officer and to identify the factors associated with it in this populations.

According to Huang .L(1998) while significance variations in houseman officers' practice behavior are well documented, the determinants for these variations are largely explored. Focusing on houseman officers, this study also examines self- esteem to explain good quality of houseman officer. According to Raju Naganandini (2019) self-esteem is a person's personal judgement of self-worth based on how well behavior matched with self-idea and it increases with experience and it is a crucial component of a perfect health care professional. According to Muzamil (2008) self- esteem has enormous influence on the quality of a houseman which affects their performance in diagnosis and treatment of patients.

Problem Statement

Empathy level affects the clinical outcomes just as much as prescribing the right medication for a disease. Houseman officers usually struggle the most to communicate with patients which is the last part of definition of empathy. The medical curriculum should give more focus promotion of empathy among the houseman because lower empathy level will lead to wrong diagnosis that may harm the patient. And clearly a very poor empathy level plays a major role in massive failure of doctor – patient relationship. Without a good empathy level, a houseman will have a poor understanding on the pathophysiology of a disease and this will directly affects their clinical performance and at the same time it reduces the quality of a good houseman officer.

Self-esteem is also a main factor that affects the quality of a houseman officer. Fear of not knowing, fear of mistakes, fear of handling patients is often rooted in traumatic residency training. If a houseman officer manage to get through training without self-doubt, it can develop in a functional work environment. Unfortunately houseman officers take their jobs very seriously and know that getting it wrong can have far- reaching devastating results. Wanting to get it right at their own expense leads to obsessing, overworking and lack of balance. These behaviours deplete their self- confidence.

Purpose of Study

This study is mainly carried out to fulfill the criteria stated below:

To measure the empathy levels of houseman officers in Malaysia-

Empathy in a houseman extends far beyond a patient's medical history, signs and symptoms. It is more than a clinical diagnosis and treatment. Empathy encompasses a connection and an understanding that includes the mind, body and soul. Expressing empathy is highly effective and powerful, which builds patient's trust, calms anxiety and improves health outcomes. According to Jerry Stone (2019), Some research has shown the empathy to be associated with better adherence to medication, fewer mistakes and increased patients satisfaction .

To assess the factors influencing the empathy levels of housemen –

The basic assumptions of the factors associated with empathy level of houseman officers are age group, gender, years of posting and the specific location of their workplace. According to Suma Nair, Ranjitha S.Shetty, Swathi Guha, Zari Anjum, Asha Kamath, (2018) considering the significance of empathy in a houseman officers, it is vital to assess the factor affecting the empathy level in order to make sure a bright future of becoming a good physician.

To evaluate the self-esteem levels among the housemen in Malaysia –

Self-esteem heavily influences people's choices and decisions. Houseman officers with high self-esteem motivate the patients to have trust and to persistently thrive towards the fulfillment of houseman officers' needs in order to make a better diagnosis. High level of self-esteem in a houseman officer make him or her stable in and out.

METHODOLOGY**Procedures**

Cross sectional study was used in this research. This study was carried out among houseman officers. The research was conducted between October and November 2019. The participants were aware of the study goals and consented to participate in it. The identification of the participants were hidden. The information we asked them were: name, gender, age, ethnic and year of attachment. All the houseman officers who participated in this study completed the two online questionnaires in order to fulfill our research objectives.

Instrumentation

A great number of studies on measuring good qualities of houseman officers have been done. There are many ways to measure good qualities in a houseman officers. The empathy level and the interpersonal relationship plays major role in determining the good quality of houseman officers. Therefore, the research was proceeded with these two main ideas. So, two different scale was used in order to measure this two criteria among houseman officers. Jefferson scale of empathy (JSE) and Rosenberg self-esteem scale (RSES) was used in our research. Besides, factor influencing the empathy level also was measured from this survey.

The measurement of empathy

Empathy is essential in the provision of patient- centered care and is described as the ability to understand the patient's situation, perspectives and feelings; communicate that understanding and check its accuracy; and then add on that understanding with the patient. According to Anna Ratka (2018) In relevance to a clinical setting, empathy is multidimensional and includes emotional, moral, cognitive and behavioral aspect. According to Brett Williams, Ted Brown, Lisa McKenna, Malcolm J Boyle, Claire Palermo, Debra Nestel, Richard Brightwell, Louise McCall,

Verity Russo, (2014) the Jefferson Scale of Physician Empathy – Health Profession Student (JSPE-HPS) version (adapted from Hojat et al) was administered to houseman officers to examine self-reported empathy level. It is designed as a 20 item 7 point Likert-scale (1=Strongly Disagree, 7=Strongly Agree), the JSPE-HPS version is designed to be completed without time constraints. Ten of the items are positively worded, while the other ten are negatively worded. The possible score range is 20 – 140. Based on Muneer G.Babar, Hanan Omar, Lee P.Lim, Saad A.Khan, Shahid Mitha, Siti F.B.Ahmad, Syed S.Hasan (2013), the higher the mean score, the higher the self-reported empathy level; behavioral tendency favoring empathetic engagement in patient care. This scale was chosen because the psychometric properties of this scale have been reported as satisfactory and the constant validity of the scale has been examined previously. According to Syed Shahzad Hasan, Muneer Gohar Babar, Kheng Kai Chan, Syed Imanan Ahmed, Shahid Mitha (2013), the instrument was found to be reliable among medical students.

The measurement of self-esteem

Self-esteem is an individual's subjective evaluation of their own worth. Self-esteem encompasses beliefs about oneself (for example, "I am unloved" "I am worthy") as well as emotional states, such as triumph, despair, pride and shame. The Rosenberg Scale of Self-esteem was used to measure self-esteem of houseman officers. It comprises ten items (five positive and five negative), each scored on a 4-point Likert scale, with higher score indicating higher levels of self-esteem. According to Jihyun Kim the possible score range from 10 – 40 and the reliability of adapted scale was 0.85 and it was 0.97 in this study.

Validity and reliability of the instrument

Content Validity

Content validity for this study was done by four experts lecturers from the faculty of medicine of Asia Metropolitan University. According to CVI Index, a rating of three out of four indicates the content is valid and consistent with the conceptual framework; for example if 2 out of four content experts rate an item as relevant (3/4) the CVI would be 2/4 (0.5), which does not meet the 3/4 (0.75) level required, and indicates the item should be dropped. All the items were valid with CVI varying from 0.75 (3/4) to 1.00 (4/4) and were retained for both the Jefferson and Rosenberg scales.

Face Validity

All respondents rated each parameter at three or four out of four on a Likert scale of 1 – 4. Average of 93% indicated they understand the questions and found them easy to answer and 100% indicated the appearance and layout would be acceptable to the intended target audience.

Internal Consistency Reliability

Cronbach's alpha was computed for the revised SQ after construct validation was computed and for Jefferson's scale it was 0.869, and for Rosenberg's scale it was 0.918 which indicates a high correlation between the items and the questionnaire is consistently reliable. Experts recommend the alpha should be at least 0.90 for instruments used in clinical settings.

RESULTS

A total of 250 houseman officers participated in this study. Table 1 illustrates the level of empathy level with age, gender, ethnic and years of working. Of the total sample, 132 (52.8%) were females and 118 (47.2%) were males. The age bracket ranged from 21 to 32 years, majority

(48.0%) being in the age group of 27 to 28 years. The proportion of first and second year housemen who participated in the study were 64% and 36% respectively. Out of the collected samples, 112 (44.8%) are Indians, 103 (41.2%) are Malays, 32 (12.3%) are Chinese and the remaining 3 (1.2%) are from other ethnics.

Table 1 Socio-Demographics of Houseman Officers (N=250)

Variables		Overall (N)
Age	21 – 26	66
	27 - 28	120
	29 - 32	64
Gender	Male	118
	Female	132
Ethnic	Malay	103
	Chinese	32
	Indian	112
	Others	3
Year of attachment	1	160
	2	90

Table 2 summarized the descriptive statistics of our first objective which is the empathy level of houseman officers in Malaysia. The total mean empathy score is 121.54 with the standard deviation of 15.53. The actual score ranged between 72- 140. An analysis of the individual JSE-HPS items showed that respondents tended to answer all items. Number of participants, means, percentages of empathy scores for all group results on the JSE are reported. 225 (90%) of the overall sample had scores from higher range with a mean of 125.00.

Table 2 Descriptive Statistic for the Jefferson Scale of Empathy in Houseman Officers (N=250)

Range	Frequency (N)	Percentage (%)	Mean
20-80 (Low)	5	2	76.00
81-100 (Moderate)	20	8	93.45
101-140 (High)	225	90	125.00
Overall Mean	121.54		
Standard Deviation	15.53		

Table 3.1 demonstrates the overall mean score of Rosenberg self-esteem score measure. The overall mean score is 35.39 with a standard deviation of 5.14. The possible range for Rosenberg scale score is 10 to 30. The actual range obtained was from 21 to 40.

Table 3.1 Rosenberg Self-Esteem Scale Result (N=250)

Range	Frequency (N)	Percent (%)	Mean
21-30 (Moderate)	65	26	28.05
31-40 (High)	185	74	37.97
Overall Mean	35.39		
Standard Deviation	5.14		

Table 3.2 shows the mean self-esteem score for all the variables. The mean score for houseman officers aged between 27- 28 is the highest. According to gender, male seem to have more self-esteem with a score of 36.31 compared to female. Ethnicity wise, houseman officers of Chinese origin have higher level of self-esteem compared to other ethnics.

Table 4.2 Mean score of self-esteem (N=250)

Variables		Mean
Age	21-26	30.88
	27-28	36.32
	29-32	34.93
Gender	Male	36.31
	Female	34.57
Ethnicity	Malay	35.20
	Chinese	37.28
	Indian	35.18
	Others	29.67
Years of Attachment	1	35.58
	2	35.06

Table 4 shows the correlation of empathy with age, gender, ethnicity and years of attachment. The p-value for factor “age” is significant with the value 0.00. Same goes for “gender” and also “ethnicity” with values 0.043 and 0.031 respectively which are less than 0.05 that make them significant.

Table 5 Correlation Of Empathy With Age, Gender, Ethnicity and Years of Working (N=250)

Variables		Mean	St. D	p value
Age	21-26	104.64	16.145	0.000*
	27-28	123.71	14.235	
	29-32	121.55	12.460	
Gender	Male	123.72	14.470	0.043*
	Female	119.80	16.180	
Ethnicity	Malay	121.00	13.49	0.031*
	Chinese	128.40	12.27	
	Indian	120.40	17.58	
	Others	109.33	14.47	
Years of working	1	121.94	15.47	0.588
	2	120.83	15.70	

*p<0.05 is significant

DISCUSSION

The present study revealed that the mean empathy score of the houseman officers in Malaysia is 121.54. In contradictory to this study, Muneer G.Babar, Hanan Omar, Lee P.Lim, Saad A.Khan, Shahid Mitha, Siti F.B.Ahmad, Syed S.Hasan (2013) found that the mean empathy score of dental students is 84.00 which is much lower than our results. In addition to this there is another findings by Syed Shahzad Hasan, Muneer G.Babar, Kheng K.Chan, Syed I.Ahmed, Shahid Mitha (2013) where the mean empathy score in pharmacy students is 83.00 which is also lower than the current findings. However, the mean score of medical students in Coastal Karnataka (101.04) by Suma Nair, Ranjitha S.Shetty, Swathi Guha, Zari Anjum, Asha Kamath (2018) is comparable to the results of our study.

Houseman officers in the 27- to-28-year- age bracket reported the highest empathy score (124.73) compared to those in other age bracket. In addition to this study, those are two previous studies by Brett Williams, Ted Brown, Lisa McKenna, Malcolm J Boyle, Claire Palermo, Debra Nestel, Richard Brightwell, Louise McCall, Verity Russo (2014) and Muneer G.Babar, Hanan Omar, Lee P.Lim, Saad A.Khan, Shahid Mitha, Siti F.B.Ahmad, Syed S.Hasan (2013) that states that the highest mean score was obtained by health professional students from 25 to 29 and dental students from 25-28 respectively.

The findings reported that the empathy level among male houseman officers were significantly high compared to female with a score of 123.72 which can be supported by the previous study carried out by Muneer G.Babar, Hanan Omar, Lee P.Lim, Saad A.Khan, Shahid Mitha, Siti F.B.Ahmad, Syed S.Hasan (2013) where they found male are more empathetic than female. Nevertheless, another study by Muneer G.Babar, Hanan Omar, Lee P.Lim, Saad A.Khan, Shahid Mitha, Siti F.B.Ahmad, Syed S.Hasan (2013) stated that female are more empathetic than male. Most studies reported female are more empathetic than male and as stated by Suma Nair, Ranjitha S.Shetty, Swathi Guha, Zari Anjum, Asha Kamath (2018) some have argued empathy is a feminine trait and stated by Helena B.M.S.Paro, Paulo S.P.Silveria, Bruno Perotta, Silmar Gannam, Sylvia C.Enns, Renata R.B.Giixa, Rosuita F.Bonito, Milton A.Martin, Patricia Z.Tempski(2014) that female are more receptive emotional signals.

Based on Jefferson's scale of empathy, Chinese origin houseman officers exhibited significantly high empathy level with a score of 128.41. In complete contrast, Muneer G.Babar,Hanan Omar, Lee P.Lim,Saad A.Khan,Shahid Mitha ,Siti F.B.Ahmad,Syed S.Hasan (2013) and Syed Shahzad Hasan, Muneer Gohar Babar, Kheng Kai Chan, Syed Imaran Ahmed, Shahid Mitha (2013) have proved that Malay origin students and physicians were more empathetic respectively. The empathy mean score for 1st year houseman officers(121.94) picturized progression of empathy level compared to 2nd year houseman officers. In addition to this study, Suma Nair, Ranjitha S.Shetty, Swathi Guha, Zari Anjum, Asha Kamath, (2018) found that the 1st year medical students are more empathetic than the others.

On positive note, this study showed an improvement in self-esteem level among houseman officers. This was proven by Rosernberg scale where out of 250 respondents, 102 participants (40.8%) obtained high score with a mean score of 35.39. Houseman officers in the age bracket of 27 to 28 had the highest self-esteem mean score (36.32) which was supported by Jikyun Kim,Korea

(2018). Male houseman officers scored the highest mean value of 36.31 compared to females. Similarly, in the previous study according to male scored higher score than female.

CONCLUSIONS

The empathy level of houseman officers who participated in this study was high. Overall, male houseman officers and houseman officers of Chinese origin were more empathetic than females and houseman officers of other ethnic origins. First year attached houseman officers were more empathetic than the second year attached houseman officers. On the other side, the self-esteem of houseman officers who participated in this study was very high.

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REFERENCES

Websites

1. Daniel C. R. C., Daniel S. K., Yan, J., Kirshenbaum E., & Robert H. A., 28 Mar 2012, Characterizing changes in student empathy throughout medical school, <https://doi.org/10.3109/0142159X.2012.644600>
2. Decety, J. and Keith J. Yoder, 2015, Empathy and motivation for justice: Cognitive empathy and concern, but not emotional empathy, predict sensitivity to injustice for others, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4592359/>
3. Elizur A. Rosenheim E. 1982, Empathy and attitudes among medical students: the effects of group experience, <https://europepmc.org/abstract/med/7202049>
4. Evans, B.J. Stanley, R.O. Burrows G.D. 1993, Measuring medical students' empathy skills, <https://doi.org/10.1111/j.2044-8341.1993.tb01735.x>
5. Glaser, 2017, Patient Perceptions of Clinician's Empathy, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5513637/>
6. Hasan, S. Al-Sharqawi, N. Dashti, F. AbdulAziz, M. Abdullah ,Shukkur, M. Bouhaimed, M. Thalib L, 2013, Level of Empathy among Medical Students in Kuwait University, Kuwait, <https://doi.org/10.1159/00034830>
7. Hasan, S.S. Babar, M.G. Chan, K.K. Ahmed, S.I. Mitha, S. October- December 2013, An assessment of pharmacy students' empathy levels in Malaysia, https://www.researchgate.net/publication/259694685_An_assessment_of_pharmacy_students'_empathy_levels_in_Malaysia
8. Helen R.W. Chur-Hansen, A. 2001, Evaluating the outcome of communication skill teaching for entry- level medical students: does knowledge of empathy increase, <https://doi.org/10.1046/j.1365-2923.2000.00463.x>
9. Helena B. M. S. Paro, Paulo S. P. Silveira, Perotta B. Gannam S. Sylvia C. E. Renata R. B. Giaxa, Rosuita F. Bonito, Milton A. Martins, and Patricia Z. Tempski ,2014, Empathy among Medical Students: Is There a Relation with Quality of Life and Burnout, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3976378/>
10. Hojata, M. Zuckermanab, M. Mageec, M. Mangionea, M. Nascaa, T. Vergarea, M. Joseph, S. Gonnellaa, November 2005, Empathy in medical students as related to specialty interest,

- personality, and perceptions of mother and father, <https://doi.org/10.1016/j.paid.2005.04.007>
12. Huang, I. 1998, Self-esteem, reaction to uncertainty, and physician practice variation: A study of resident physicians, <https://www.sbp-journal.com/index.php/sbp/article/view/922>
 13. John W. Peabody, Luck, J. Glassman, P. M. Jain, J. Hansen, J. Spell, M. Lee, M. 2004, Measuring the Quality of Physician Practice by Using Clinical Vignettes: A Prospective Validation Study, <https://annals.org/aim/fullarticle/717960/measuring-quality-physician-practice-using-clinical-vignettes-prospective-validation-study>
 14. Kataoka , Hitomi , Koide, Norio, Ochi, Koji, Hojat, Mohammadreza, Gonnella, Joseph S. 2009 , Measurement of Empathy Among Japanese Medical Students: Psychometrics and Score Differences by Gender and Level of Medical Education, https://journals.lww.com/academicmedicine/fulltext/2009/09000/measurement_of_empathy_among_japanese_medical.13.aspx
 15. Kliscow, J. Nowicka-Sauer, K. Trzeciak, B. Nowak, P. Sadowska, A. 2006, Empathy in health care providers--validation study of the Polish version of the Jefferson Scale of Empathy, <https://www.ncbi.nlm.nih.gov/pubmed/17357313>
 16. Kramer, D. Moore, R.B.M., March 1989, Increasing empathy among medical students, <https://doi.org/10.1111/j.1365-2923.1989.tb00881>
 17. Kupfer, David, J. Drew, Frances, L. Curtis, Ellen, K. Rubinstein, Debra, N. D. N. 1978. Personality style and empathy in medical students. *Journal of Medical Education*, 53(6), 507-509, <https://psycnet.apa.org/record/1979-21923-00>
 18. Marcocaphelle, 9th October 2019, Clinical Empathy, https://en.wikipedia.org/wiki/Clinical_empathy
 19. Muneer G. Babar, Omar, H. Lee P. Lim, Saad A. Khan, Mitha S. Siti F.B. Ahmad, and Syed S. Hasan, 21 November 2013, An assessment dental students' empathy levels in Malaysia, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4205538/>
 20. Muzamil, 2008, An Assessment of Self-Esteem among Women, https://www.researchgate.net/publication/321216007_An_Assessment_of_Self-Esteem_among_Women
 21. Naganandhini, R. 2019, Self-esteem among adolescents, https://www.researchgate.net/publication/332843240_Self-esteem_among_adolescents
 22. Naganandhini, R. 2019, Self-esteem among adolescents, https://www.researchgate.net/publication/332843240_Self-esteem_among_adolescents
 23. Nair, Suma and Shetty, Ranjitha, S. and Guha, Swati and Anjum, Zari and Kamath, Asha, 2018, Assessing empathy among undergraduate medical students: a cross sectional analysis using the Jefferson scale in a medical school in Coastal Karnataka, <http://eprints.manipal.edu/id/eprint/151939>
 24. Park, K.H. corresponding author Dong-hee, K. Kim, S.K. Yi, Y.H. Jeong, J.H. Chae, J. Hwang, J. and Roh, H., 2015, The relationships between empathy, stress and social support among medical students, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4561553/>
 25. Sarah E. Wilson, Prescott, J. and Becket G. (2012). Empathy Levels in First- and Third-Year Students in Health and Non-Health Disciplines, <https://doi.org/10.5688/ajpe76224>
 26. Simon M. 2011, Assumptions, Limitations and Delimitations, www.dissertationrecipes.com
 27. Stone, S. 2019, The Importance Of Empathy In Healthcare: Advancing Humanism, <http://blog.medicalgps.com/the-importance-of-empathy-in-healthcare/>

28. Tavkol, S. Dennick, R. & Tavakol, M. Accepted 01 May 2011, Published online: 07 Oct 2015, Empathy in UK Medical Students: Differences by Gender, Medical Year and Specialty Interest, <https://doi.org/10.1080/14739879.2011.11494022>
29. Wikipedia, 12th October 2019 <https://en.wikipedia.org/wiki/Empathy#Measurement>
30. Williams, B. Sadasivan S. Kadirvelu A. and Olaussen, A. 2014, Empathy levels among first year Malaysian medical students: an observational study, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4035026/>
31. Williams, B. Brown, T. Boyle M. McKenna L, Palermo C. and Etherington J. 2014, Levels of empathy in undergraduate emergency health, nursing, and midwifery students: a longitudinal study, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4166255/>