


Perceptions of Malaysian medical students from different academic years on primary care: a qualitative research

Sook Ching Chan ¹, Jaya Vinoshairine Ganeson,^{1,2} Jee Tat Ong,^{1,3} Sandheep Sugathan^{1,4}

To cite: Chan SC, Ganeson JV, Ong JT, *et al.* Perceptions of Malaysian medical students from different academic years on primary care: a qualitative research. *Fam Med Com Health* 2020;**8**:e000188. doi:10.1136/fmch-2019-000188

ABSTRACT

Objective To explore the perception of medical students from a private medical college in Perak, Malaysia, on primary care practice and induce the factors influencing their perception and willingness to consider primary care as a career pathway.

Design Qualitative study using focus group discussions. Participants' responses were audio recorded, transcribed, grouped under various domains and listed out and analysed.

Setting A private medical college in Perak state, Malaysia.

Participants Forty-six medical students from years 2 to 5 were included. Eight focus groups were formed with two focus groups from each academic year (six students each in seven groups and four students in one group). Students were informed through their respective student leader of each year and received a participant information sheet and an informed consent form which were completed and returned if they decided to participate in the focus group discussions.

Results The participants had different levels of understanding of primary care depending on their level of exposure to primary care. Senior students with more exposure had a better understanding about primary care and its services. Attractive factors towards choosing primary care as a career included short working hours with a more balanced family and social life, being able to treat patients as a whole with continuity of care and closer relationship with patients. Unattractive factors included routine, unchallenging and boring practice, poor salary, work overload and administrative work in government clinics, being less recognised by other specialties; and the poor perception by other doctors that those pursuing primary care were not 'brilliant enough' for more 'sophisticated disciplines like surgery or paediatrics'.

Conclusion This study showed that the medical students' level of exposure to primary care played a crucial role in determining their understanding of primary care practice and their choice of career in primary care. Issues to be addressed include remuneration, workload and the prejudice against primary care as a career pathway. Suggestions included introducing early exposure to fun and challenging primary care postings in the medical curriculum and producing well trained, skilled and enthusiastic role models.

Significance of the study

► The views of the medical students in this study indicated that in Malaysia today there is still a poor perception of primary care practice that contributed to it being unattractive as a career choice. Early exposure to primary care in medical school may help. This requires national bodies such as the Academies/Colleges of General Practice/Family Medicine and the Ministry of Health to take the lead to lobby for major curriculum changes in line with the Declaration of Alma-Ata and Astana. To make primary care more attractive, issues to be addressed include remuneration, workload, primary care physicians' training to produce well trained, skilled and enthusiastic role models and devising fun and challenging primary care postings.

INTRODUCTION

The Alma-Ata Declaration (WHO, 1978),¹ reaffirmed in Astana, (October 2018),² stated that primary care plays a critical role and is the basis for effective delivery of health services around the world. In Malaysia, primary care services are provided by Ministry of Health (MOH) public primary care clinics (PPCC) and by general practitioners (GPs) in the private sector. These clinics provide first contact care, acute and chronic diseases management, preventive care and health promotion, coordinating and integrating patient care with the rest of the health system.

Postgraduate training is by the local public universities' Masters in Medicine (Family Medicine (FM)) programme³ and the Academy of Family Physicians of Malaysia advanced training programme leading to the Conjoint Member of the Academy of Family Physicians of Malaysia/Fellow of the Royal Australian College of General Practitioners examinations.⁴ In MOH, these graduates become FM specialists in PPCC. However GPs with the same postgraduate degree currently have no additional incentives. Jenn Ng *et al* in their study on 'The Status of Family



© Author(s) (or their employer(s)) 2020. Re-use permitted under CC BY-NC. No commercial re-use. See rights and permissions. Published by BMJ.

¹Community Based Department, Faculty of Medicine, Universiti Kuala Lumpur Royal College of Medicine Perak, Ipoh, Perak, Malaysia

²Hospital Sultanah Bahiyah, Alor Setar, Kedah Darul Aman, Malaysia

³Hospital Kuala Pilah, Kuala Pilah, Negeri Sembilan, Malaysia

⁴Department of Community Medicine, Quest International University Perak, Ipoh, Perak, Malaysia

Correspondence to

Dr Sook Ching Chan; drscchan@gmail.com

Medicine Training Programs in the Asia Pacific' indicated that the majority of medical schools (n=71/75) who responded had a FM department/unit, teaching FM in 92% of participating medical schools' undergraduate programme.⁵ Although 20 out of 25 countries recognised FM as a specialist degree, only 53% reported conducting a postgraduate programme in FM.⁵

A survey among senior medical students from a private medical college in Melaka, Malaysia, showed that the majority (75%) chose internal medicine, surgery, paediatrics, orthopaedics and obstetrics and gynaecology (OG) as their choice of specialty. Primary care was listed among 'others' in the lowest category (2.7%).⁶ Another survey on factors affecting first year medical students choice of future specialisations done in China, Malaysia, India, Nepal and Sri Lanka, again indicated their preferred future specialisations were in surgery, internal medicine, paediatrics and OG.⁷ A study published in 2005 on the perceptions of Malaysian final year medical students on primary care showed mixed perception with some students perceiving primary care as a 'non-discipline' lacking depth, and associated primary care to soft skills such as communication skills and not core knowledge. The students noted disparity between the theoretical teaching and its actual practice in the community, resulting in students losing interest in FM.⁸ In March 2019, Malaysia's Health Minister, in launching the fifth Association of South East Asian Nations (ASEAN) Regional Primary Care Conference, stated that the FM fraternity must work harder to promote and encourage young doctors to take up FM as their future career pathway. Malaysia had nearly 500 FM specialists but needed at least 1500 in the next few years.⁹

Choice of specialty by medical students affects society as a whole, as the pattern of residency selection shapes the long-term composition of the medical work force in the country.¹⁰ Studies in USA, Canada, Australia and UK showed the reasons for a declining interest in primary care/FM by medical school graduates were due to lack of recognition by medical schools and healthcare systems, been given subtle advice from other specialists that FM was less prestigious with low intellectual content, looked down by other colleagues and that family physicians could not master the content of the specialty. Other deterrents included the wide scope of the field, excessive workload, poor remuneration and lack of support from the ministry as well as the community.¹¹⁻¹³

There are no studies in Malaysia exploring the medical students' year of study and their perception of primary care practice and primary care as a career choice. The objective of this present study was to explore the perception of medical students from a private medical college in Perak, Malaysia on primary care practice by assessing the students' perceptions according to their year of study; evaluating their attitude and perceptions about primary care in the health system and exploring the factors affecting medical students' perception on primary care practice. This study also aimed to construct the understanding of the conceptions of primary care practice by medical

students and whether they would want to consider taking up primary care as a specialty on graduation.

METHODS

This is a qualitative participatory research on the perception of primary care practice among medical students in a private medical college in Perak, Malaysia (Royal College of Medicine Perak) using focus group discussions (FGDs). The medical college is the second oldest private medical college in Malaysia established in 1996. Under a subsidiary owned by the Perak state government, it initially offered twinning programmes with an overseas and a local university, with its first intake in 1998. Since 2006, under Universiti Kuala Lumpur, it started its own medical degree programme.

FGDs were used to gain an in-depth understanding of medical students' knowledge, attitudes and perceptions on primary care practise. Interpretivist research paradigm was used.

Research was done as part of a 7-week student research project module. The proposal was presented to the committee in charge of student research projects and approval obtained. Data collection was carried out by the second and third authors who were year 4 medical students (one male and one female student). Purposive sampling was used with eight groups of participants (a total of 46). Six students each in seven groups and four students in one group were selected for FGD with two groups of equal number of participants from each academic year from year 2 to year 5. The initial target was 48 participants, 12 participants from each student year. However, only 10 students volunteered from year 3. The researchers were unable to recruit more because of time constraints and the year 3 students were in various clinical postings in the hospital.

All medical students were informed through the respective student leader of each year from year 2 to year 5 about the FGD. This was done to get participants as heterogeneous and unbiased as possible from each year. Year 1 was excluded as the medical students had just joined the university and was undergoing orientation. The participation in this study was voluntary. Students received a participant information form containing information about the study and an informed consent form to complete and return if they decided to participate.

Prior to the study, some year 4 students who were not part of the research and the supervisors (first and fourth authors, lecturers from primary care and public health disciplines respectively) had gone through the questions and themes prepared by the second and third authors. After discussion and amendments, the questions were finalised and included in FGD (refer to [table 1](#)). Those who were interested to participate received a focus group protocol which gave the list of questions and prompts to be asked during FGD along with guides provided by the authors (refer to [table 1](#)).

Table 1 Themes and preset questions used in focus group discussion

Themes	Questions
Participants' knowledge on primary care	What is your initial understanding about primary care in Malaysia?
	What do you know of primary care setting in Malaysia?
	What do you know of services provided by primary care practitioner?
	Where would you go for information and advice regarding primary care?
Participants' perception on primary care	How much and what type of exposure to primary care have you encounter before?
	In your opinion, what are those attractive factors of being a primary care practitioner?
	In your opinion, what are those uninviting factors of being a primary care practitioner?
Participants attitude towards primary care	Do you think there is anything that could be done make primary care training more attractive to you?
	Do you consider primary care as a specialisation in its own right? Why/why not?
	Would you consider primary care as your career path? Why/why not?

The questions under each theme included engagement questions, exploration questions and exit questions. Questions were open ended questions.

The FGDs were conducted on the medical school campus in a non-threatening environment in the presence of students only (second and third authors) without the presence of lecturers. After an introduction to the research and its objectives by the second and third authors, participants were encouraged to give their opinions and comments to each question. Participants were probed till adequate responses were obtained under different themes. When there were no more responses, the group went on to the next question. Each FGD was conducted in one sitting. The FGDs were conducted until the researchers agreed that all the participants expressed their views and data saturation achieved. Each FGD lasted about average 1 hour. Repeat FGDs were not conducted. Since the perceptions of students on selecting primary care as a specialty, based on their real-life experiences and perceptions on social status, phenomenology concept was used with content analysis for our research.

Responses of the participants were audio recorded, transcribed, grouped into various domains and analysed by two researchers independently and then verified for differences. One of the two authors who conducted the FGD (recorder) also noted down the main points on the responses of participants, while the other was the moderator who asked and clarified questions. Transcripts were not returned to the participants for further comments or feedback.

Content analysis was done manually based on the responses obtained under each domains or minor themes, using thematic analysis. Responses were categorised based on the year of study and analysed. Students who were involved in data collection had received training in qualitative data collection during the public health posting during which they had a hands-on experience in community settings.

Two coders coded the data and categorised the responses into three themes (knowledge, perception and attitude to primary care). Knowledge had four

domains (primary care setting in Malaysia, services by primary care practitioners, information of primary care subject, quantity and exposure on primary care), perception had three domains (attractive factors, uninviting factors, how to make more attractive) while attitude two domains (primary care as specialisation and career path with reasons). Participant checking was not done. Quotations from each major themes and minor themes were presented. The final report was submitted at the end of year 4 Student Research Project module in 2016.

RESULTS

Forty-six students participated. Altogether there were eight focus groups. Students from each year of study (year 2, year 4 and year 5) had 12 participants each with 6 students representing each focus group making a total number of 36 participants. However, for the year 3 students, only 10 students participated in FGD in two groups (n=10, four and six participants in each group).

The three main themes and questions under each theme (refer [table 1](#)) were covered in each FGD. The findings from FGD were summarised below with relevant quotes of the participants. Although separate analyses were done on each year, the findings on medical students from different years of study from year 2 to year 5 were described together because they were quite similar.

Theme 1: knowledge on primary care Initial understanding and knowledge about primary care setting in Malaysia and services provided by primary care practitioner

The senior medical students had a better understanding and more in depth knowledge about primary care than the junior students. The latter were divided in their understanding and knowledge. Most participants from year 2 mentioned that primary care practitioners provided full medical check-ups with laboratory investigations, did minor surgery and provided medications to the patients. Some year 3 students confused primary care and public health (refer [table 2](#) for students' quotes).

Table 2 Quotes from medical students according to themes and year of study

Year of study	Theme/quotes by medical students
Year 2	Knowledge of primary care (setting, services) <ul style="list-style-type: none"> ▶ 'Unsure about primary care. First time hearing about this terminology'. ▶ 'Primary care is our own house services like first aid, ambulance services and self treatment' ▶ 'First place to go if we are sick and want to get a treatment' ▶ 'Private clinics and government clinics—this is the place we can easily be consulted by a doctor before visiting a specialist for further information'
Year 3	<ul style="list-style-type: none"> ▶ 'Primary care is mostly established in the hospital and district health office which educate on preventive measures and carry out campaigns to create health awareness'. ▶ 'Public education like campaign by providing pamphlets. Counselling from doctors and law enforcement on water supply and food hygiene issues'.
Year 4	<ul style="list-style-type: none"> ▶ 'Primary care is the first line which provides services to patient in the clinics' ▶ 'It is like consultant is giving advices, making diagnosis, carrying out necessary lab test and monitoring progression of disease and refer patient to hospital'
Year 5	<ul style="list-style-type: none"> ▶ 'Primary care is a field where we see patients as a whole. Not only do we treat the patients' current disease but also the co-morbidities related to patient lifestyles.' ▶ 'Generally, it is divided into two which is public and private sector. In public sector, we have health care clinics—in private sector, we have GP (general practice) clinics'
Year 2	Perception of primary care (attractive factors, uninviting factors of being a primary care practitioner, ideas to make it more attractive) <ul style="list-style-type: none"> ▶ Working hours—office hours from 8 to 5pm, therefore I can spend time with my family and not worrying having on calls. I can gain knowledge daily because I am seeing different types of patients.'
Year 3	<ul style="list-style-type: none"> ▶ 'It is a relaxing job because we are not dealing with critical situation' ▶ 'It's very hard to make primary care an interesting posting. All I can think of is maybe changing the lecturer's way of educating medical students.'
Year 4	<ul style="list-style-type: none"> ▶ 'They need to know a wide range of diseases and symptoms before they diagnose a patient. They need to have an excellent array of medical knowledge and they don't have on call. In other words, their working hours is quite flexible'. ▶ 'Building up trust with patient, less working hours therefore they can spend their time well with family members. They have to be knowledgeable since they need to tackle different types of diseases.'
Year 5	<ul style="list-style-type: none"> ▶ 'I find it very interesting. For example: the working hours of it starts from 8am to 5pm, I will be able to spend my time with my interest. Secondly, is because continuity of care—I will be seeing the same patient from young to old age', ▶ 'Mainly because I will be able to treat patient as a whole. For example, when a patient comes in with epigastric pain, instead of making a straight forward diagnosis like acute gastroenteritis, I will think from different medical aspects. I will be able to master the skills of ruling out other differential diagnosis.' ▶ 'Bad perception among doctors. They think that a doctor only pursues primary care because they are not brilliant enough to study any other more 'sophisticated' discipline like surgery or paediatrics'.

Information and advice on primary care

Almost all participants from this study (year 2 till year 5) mentioned that the easiest and most reliable way to retrieve information and seek advices on primary care was from the primary care practitioner himself, by surfing the internet especially on the MOH website and by going to the respective clinics to talk to the doctor or nurses, via pamphlets and clinically provided brochures. Most believed that the websites available on the Internet would provide them as much information as the doctor himself would.

Quantity and type of exposure to primary care encountered

All year 2 students mentioned that they had minimum exposure to primary care. Year 3 students confused it with public health which was a year 3 posting. Quote from year 5 student: 'During year 3—first experience with

attachment to GP clinics and year 4 during the district posting which taught me better.' 'We have been to the primary care posting and district posting. We sharpened our clinical skills during these posting for example, blood taking and circumcision. We are able to see wide range of illness compare to specific posting like surgery and medicine.'

Theme 2: perception on primary care

Opinion on attractive factors and uninviting factors of being a primary care practitioner

Most participants agreed that the attractive factors were the short working hours and ability to develop better communication skills when constantly dealing with patients on a daily basis. Uninviting factors mentioned included low income compared with other specialties, not challenging and boring as GPs saw same type of

illnesses daily, 'only common cold, fever and acute gastroenteritis', not serious illnesses. Other factors included excessive workload in government clinics, having to do administrative 'jobs' and not favoured by most house officers as a career choice being less recognised by doctors and colleagues. Refer to [table 2](#) for quotes from students.

Ideas to make primary care training more attractive to medical students

All year 2 participants suggested more exposure to primary care because they had 'never heard of this term before'. Eight out of 10 students from year 3 said nothing could be done as they felt it was just boring and they could not come up with ideas on how to boost their interest. Year 4 students suggested increasing the salary of a GP and introduce primary care early in year 3 'rather than making us go through all the specialisations and then only teach us what primary care all about in our fourth year which I personally think is a bit too late because students begin to develop more interests in other specialisations since year 3'. Four students suggested that MOH should make primary care a compulsory posting for the housemen training programme or have a workshop for the undergraduates to encourage them to specialise in this field.

All the year 5 students wanted more tutorials and private discussions with their lecturers during their primary care posting. Quotes: 'They should lengthen the outpatient sessions with the doctors. This is when we learn our soft skills for practical procedures and improve our communication skills. 'We are given a lot of exposure during the posting. But they should lengthen the sessions of Maternal and Child Health Clinics (MCHC), palliative care and school health and divide them equally so that we can learn more on all those areas.' 'More one to one sessions with lectures will be very beneficial so that we are able to discuss the cases in a more detailed manner and not just briefly.'

Theme 3: attitude towards primary care

Consideration of primary care as a specialisation on its own right and reasons

All year 2 students mentioned that they would not consider primary care as a specialisation in its own right because 'it is not as specific as other disciplines', 'they are merely handling general illnesses' and 'the patients come to them only with simple and minor illness which does not require much attention and treatment.'

Six students from year 3 said that they would consider it as a specialisation but they had a misconception that primary care was actually part of public health and that it involved dealing with statistics and research. Quote: 'It requires a whole different type of skill compared to other discipline. It does not require clinical skills but more related to communication skills and the prevention of diseases.'

The year 4 participants gave vague answers to this question such as 'Yes, you need to know this particular field

first before you can further down to many other studies' and 'Yes, because it is equally important as are other specializations'.

Consideration of primary care as your career path and reasons

All year 2 and year 3 students would not consider primary care as their career path because they had very little idea and/or had misconceptions about primary care as mentioned earlier.

Six students from year 4 and eight students from year 5 said they might consider primary care as their career pathway because they can combine work with family for a balanced family and social life. Three students from year 4 were uncertain while a few said no because they were attracted to other more interesting and challenging disciplines in medicine. The remaining four participants from year 5 said they would not choose primary care for their career in the future, Quotes from year 5 students: 'Yes, because people might take primary care lightly but it is actually the other way round. They need to treat patients as a whole based on the minimal number of symptoms mentioned.' 'Yes, without primary care, the Accident and Emergency department at the hospital will be full of simple cases like common cold and fever and this will cause massive hectic to the hospital staffs. It plays a big role in our health care system as they prevent the worsening of illness. They need to make a decision for better treatment for patient either by referring the patient to hospital or treating the patient with medication and sending them back home.' 'No, I don't want to be doing the same routine job and seeing the same type of illness every day for the rest of my life.'

'No, because I lack knowledge and clinical skills that a general practitioner requires. Personally, I would prefer a branch of medicine which is more specific unlike primary care which involves a wide range of unexpected illnesses.'

DISCUSSION

This study showed that the students' lack of interest in taking up primary care as a career option related with its social setting by (1) a lack of exposure/misconceptions as shown by the years 2 and 3 students; (2) excessive workload, wide scope, poor remuneration for primary care practitioners; (3) lack of support, influence and prejudice against primary care from community/other health professionals. Similar findings were seen in studies from USA, Canada, Australia and UK.¹¹⁻¹³ Senior medical students (years 4 and 5) showed more interest in primary care as a career option, it appeared as (1) more exposure to primary care giving them a better understanding especially in aspects such as continuity of care and whole person care (2) the challenging nature of managing a wide range of illnesses encountered and (3) a balance between family, social life and work.

Some students suggested that the university provides a shorter or introductory primary care posting earlier in year 3 to generate more interests towards primary care

practice, reduce the students' perception that primary care was not an important discipline and to increase their level of understanding and exposure to this specialty.

Students in the Commonwealth Medical College (TCMC) in Pennsylvania had early exposure to primary care, accompanying primary care physicians and following a cohort of patients in a community-based experience that focused on continuity of care during first year in medical school. As a result, one-third of TCMC's 2013 graduates selected FM, internal medicine and paediatrics as their residency programmes.^{14 15}

In the previous Malaysian qualitative study,⁸ students developed an interest in FM when they encountered good GP role models. An American study also showed that 75% of medical students prioritised role models on their specialty choice compared with 71% stating lifestyle factors and 51% reporting future income as being important.¹⁶

Students in this study did not specifically mention primary care role models influencing their career choice but were attracted to become primary care practitioners because to them the key of being a good doctor was being able to provide continuous care to their patients for a long time, being able to build a strong doctor patient relationship and to keep up with a wide array of medical knowledge and not lose their medical, practical and communication skills due to daily practice. Besides finding the wide scope of primary care challenging, some found altruistic appeal 'Treating patient as a whole and build up rapport with them, I would consider it more humane although the pay is low'.

Other factors attracting students to primary care included flexible and shorter working hours with no on-calls duties. Negative factors included low pay, heavy workload, high administrative burden and GPs not always regarded highly by the public as compared with other specialists. Similar findings were found in other studies.¹⁷⁻¹⁹

Strengths and limitations of this study

While the previous qualitative study was conducted by lecturers among final year medical students only,⁸ the FGDs in the present qualitative study were conducted by students in a non-threatening environment and was able to look at the impact of the level of exposure of medical students from years 2 to 5 on their perception of primary care. In the survey in Melaka Malaysia,⁶ primary care was found to be one of the least popular specialty of choice but no qualitative study was done to look in-depth into factors influencing their choice.

The present study's limitations included only 10 year 3 students participated, year 1 students were excluded because of orientation, the study was done in one private medical school in Malaysia and the participants were not asked to provide feedback on the findings.

Larger studies are suggested involving both public and private medical schools nationwide. Much needs to be done to achieve what the Malaysian Health Minister

hoped to see in the near future—an additional one thousand FM specialists.⁹

CONCLUSION

This study showed that the medical students' level of exposure to primary care played a crucial role in determining their understanding and their choice of career in primary care. To make primary care more attractive, issues to address include remuneration, workload, the prejudice against primary care and efforts to produce well trained, skilled and enthusiastic role models with fun and challenging primary care postings, early in the medical curriculum.

Acknowledgements The authors would like to thank all the students who participated in this study and Universiti Kuala Lumpur Royal College of Medicine Perak for permission to conduct this study.

Contributors All the authors were involved in planning, conducting, analysing and writing up this study.

Funding The authors have not declared a specific grant for this research from any funding agency in the public, commercial or not-for-profit sectors.

Competing interests None declared.

Patient consent for publication Not required.

Ethics approval The research protocol was presented to and approved by a committee comprising of lecturers from the community-based department, including a representative from the college's ethics committee (UniKLRCMP/MREC/2015/069).

Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement Data are available on reasonable request.

Open access This is an open access article distributed in accordance with the Creative Commons Attribution Non Commercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited, appropriate credit is given, any changes made indicated, and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>.

ORCID iD

Sook Ching Chan <http://orcid.org/0000-0002-5426-0524>

REFERENCES

- World Health Organization. Primary health care. Available: http://www.who.int/topics/primary_health_care/en/ [Accessed 26th Sep 2018].
- The Lancet. The Astana declaration: the future of primary health care? *Lancet* 2018;392:1369.
- Academic Programmes. Postgraduate: master of medicine (family medicine) at UKM. Available: <https://www.pukm.ukm.my/perubatankeluarga/postgraduate-2/>
- Advanced training in family medicine (ATFM). Advanced training in family medicine (ATFM) at Academy of Family Physicians of Malaysia website. Available: <https://www.afpm.org.my/programmeatfm>
- Jenn Ng C, Lieng Teng C, Abdullah A, *et al*. The status of family medicine training programs in the Asia Pacific. *Fam Med* 2016;48:194-202.
- Chew YW, Rajakrishnan S, Low CA, *et al*. Medical students' choice of specialty and factors determining their choice: a cross-sectional questionnaire survey in Melaka-Manipal medical College, Malaysia. *Biosci Trends* 2011;5:69-76.
- Kumar A, Mitra K, Nagarajan S, *et al*. Factors influencing medical students' choice of future specialization in medical sciences: a cross-sectional questionnaire survey from medical schools in China, Malaysia and regions of South Asian association for regional cooperation. *N Am J Med Sci* 2014;6:119-25.

- 8 CJ N, Leong KC, Teng CL. What do medical students think about primary care in Malaysia? A qualitative study. *Education in Primary Care* 2005;16:575–80.
- 9 theSundaydaily. The sun daily 28 March 2019: Malaysia needs more family medicine specialists: Dzulkefly. Available: <https://www.thesundaily.my/local/malaysia-needs-more-family-medicine-specialists-dzulkefly-FE732351>
- 10 Osborn HA, Glicksman JT, Brandt MG, *et al*. Primary care specialty career choice among Canadian medical students: understanding the factors that influence their decisions. *Can Fam Physician* 2017;63:e107–13.
- 11 Pugno PA, Schmittling GT, McGaha AL, *et al*. Entry of US medical school graduates into family medicine residencies: 2005–2006 and 3-year summary. *Fam Med* 2006;38:626–36.
- 12 Essuman A, Anthony-Krueger C, Ndanu TA. Ghana medical Journal perceptions of medical students about family medicine in Ghana 2013;47:178–84.
- 13 MacKean P, Gutkin C. Fewer medical students selecting family medicine. can family practice survive? *Can Fam Physician* 2003;49:408–17.
- 14 AAMC. *U.S. medical school graduation questionnaire*. Washington, DC: Association of American Medical Colleges, 2007.
- 15 Medical Education Futures Study. The Commonwealth medical college. medical education futures study. George Washington University school of public health and health services, 2011. Available: <http://www.medicaleducationfutures.org/featured-programs/commonwealth-medical-college> [Accessed 16 Sep 2015].
- 16 Dukehealth.org. Primary care 101. DukeMed magazine, 2011. Available: http://www.dukehealth.org/health_library/health_articles/primary-care-101 [Accessed 26 Sep 2018].
- 17 Piazza Consulting ; General Practice Education and Training. *Australian medical student and junior doctor attitudes to general practice final report*, 2008.
- 18 Avery DM, Wheat JR, McKnight JT, *et al*. Factors associated with choosing family medicine as a career specialty: what can we use? *Am J Clin Med* 2009;6:54–8.
- 19 Council on Medical Education. *Barriers to primary care as a medical career choice*. Chicago, IL: American Medical Association, 2008.