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# Who is an effective clinical teacher from the perspectives of medical students and residents?

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## Abstract

**Introduction:** Almost all published literature on effective clinical teachers were from western countries and only two compared medical students with residents. Hence, this study aims to explore the perceived characteristics of effective clinical teachers among medical students compared to residents graduating from an Asian medical school, and specifically whether there are differences between cognitive and non-cognitive domain skills, to inform faculty development.

**Methods:** This qualitative study was conducted at the National University Health System (NUHS), Singapore involving six final year medical students at the National University of Singapore, and six residents from the NUHS Residency programme. Analysis of the semi-structured one-on-one interviews was done using a 3-step approach based on principles of Grounded Theory.

**Results:** There are differences in the perceptions of effective clinical teachers between medical students and residents. Medical students valued a more didactic spoon-feeding type of teacher in their earlier clinical years. However final year medical students and residents valued feedback and role-modelling at clinical practice. The top two characteristics of approachability and passion for teaching are in the non-cognitive domains. These seem foundational and lead to the acquisition of effective teaching skills such as the ability to simplify complex concepts and creating a conducive learning environment. Being exam-oriented is a new characteristic not identified before in “Western-dominated” publications.

**Conclusion:** The results of this study will help to inform educators of the differences in a learner’s needs at different stages of their clinical development and to potentially adapt their teaching styles.

**Keywords:** *Clinical Teachers, Medical Students, Residents, Cognitive/Non-Cognitive, Asian Healthcare, Faculty Development*

## Practice Highlights

- Approachability and teaching passion are foundational non-cognitive skills in effective clinical teachers.
- These foundational skills are more important for undergraduate than postgraduate teaching.
- Procedural residents can accept less ‘warm’ teachers if they can learn advanced clinical skills.
- Medical students value didactic ‘spoon-feeding’ type of teachers in their earlier clinical years.
- Final year medical students and residents value feedback and role-modelling at clinical practice.

## I. INTRODUCTION

“The transformation of our students requires the engagement of innovative and outstanding clinician-teachers who not only supervise students in their development of technical skills and applied knowledge

but also serve as role models of the values and attributes of the profession and of the life of a professional” (Sutkin, Wagner, Harris, & Schiffer, 2008). This statement nicely encapsulates the very important role played by outstanding clinical teachers in helping

students to ultimately become professionals with the attributes our healthcare system desires. Previous research has extensively investigated characteristics of effective clinical teachers to inform faculty development (e.g. Branch, Osterberg, & Weil, 2015; Hatem et al., 2011; Hillard, 1990; Kernan, Lee, Stone, Freudigman, & O'Connor, 2000; Paukert & Richards, 2000; Singh et al., 2013; Sutkin et al., 2008; White & Anderson, 1995). However, despite the large body of existing research on effective clinical teaching, two issues related to the needs of different groups of learners need further investigation to enable more tailored faculty development.

First, effective clinical teaching may look different in undergraduate as compared with postgraduate education. In many healthcare institutions, clinical teachers are expected to teach across the medical education continuum, i.e., undergraduate medical students, graduate doctors in training, as well as part of continuing medical education, and teaching abilities are a necessary prerequisite in an academic environment (Hatem et al., 2011). Based on the conceptual framework of constructivism (Bednar, Cunningham, Duffy, & Perry, 1991)—a theory which equates learning with creating meaning from experience or contextual learning—Jonassen (1991) argues that constructive learning environments are most effective for acquiring knowledge in the advanced stage of knowledge, the stage between introductory and expert. According to Jonassen (1991), the initial or introductory stage of knowledge acquisition occurs when learners have very little directly transferable prior knowledge about a skill or content area. In this stage, knowledge is best acquired through more objectivistic approaches which can be described as 'spoon-feeding'. Medical students in general would fit into this introductory stage, in varying degrees depending on their seniority and individual progress in learning. Jonassen's (1991) second stage is advanced knowledge acquisition where the domains are ill-structured and more knowledge-based. This is in contrast to his third or final stage of knowledge acquisition of experts that require very little instructional support but are able to deal with elaborate structures, schematic patterns and seeing the interconnectedness in knowledge through experience. The stage of junior doctors in training would be fit into the second or advanced stage of learning. Constructivist teachers help students construct knowledge to become active learners rather than passive recipients of knowledge from the teachers or textbooks. In view of this constructivist framework, it appears logical to postulate that as medical students mature to become practicing doctors, their perceptions of effective clinical teachers may change from one who 'spoon-feeds' them with medical knowledge to one who encourages them to actively construct new meaning as they become clinically more experienced and have to

deal with complex and ill-defined problems. Low, Khoo, Kuan, and Ooi (2020) showed that although the top four characteristics of effective medical teachers are consistent across all 5 years of medical school, characteristics that facilitate active learner participation are emphasised in the clinical years consistent with constructivist learning theory. However, as there is a paucity of comparative research on perceptions of effective clinical teachers among undergraduates as compared to postgraduates to plan more focused faculty development to address the attributes the learners look for in their clinical teachers, this warrants further research.

The second issue relates to potential differences in the clinical teaching role between Asian and Western settings. In Western studies, as noted above, effective clinical teachers are encouraged to stimulate students' intellectual curiosity leading to more self-directed learning (Hillard, 1990; Kernan et al., 2000; White & Anderson, 1995). In contrast, feelings of uncertainty about the independence required in self-directed learning, a focus on tradition that respects 'old ways', hierarchy expecting 'truths' to come from persons of higher status, and an achievement orientation to pass and excel in examinations have been identified as more prominent in non-Western than in Western cultures (Frambach, Driessen, Chan, & van der Vleuten, 2012). This is despite the recent introductions of more student-centred education methods. In Singapore for example, there is a move in the Yong Loo Lin School of Medicine (YLLSoM) to try to embed students into healthcare teams (Jacobs & Samarasekera, 2012) and implement newer methods of learning such as flipped classroom. However, many teachers still employ traditional methods of lectures and small group tutorials focused on exam preparation. A comprehensive review study of 68 articles on effective clinical teaching (Sutkin et al., 2008), comprised only one article that reported research from a non-Western setting (Elzubeir & Rizk, 2001). In this article, originating from the United Arab Emirates, there is no discussion on whether there is a difference in the perception of a role model between medical students in Asian countries compared to the West (Elzubeir & Rizk, 2001). Another study conducted in Asia showed differences in the perceptions of first-year and fifth-year medical students in Singapore on what makes an effective medical teacher (Kua, Voon, Tan, & Goh, 2006). More first-year students preferred handouts in contrast to fifth-year students who were less reliant on 'spoon-feeding'. Research on effective clinical teaching is growing in the Asian setting (Ciraj et al., 2013; Haider, Snead, & Bari, 2016; Kikukawa et al., 2013; Mohan & Chia, 2017; Nishiya et al., 2019; Venkataramani et al., 2016) though there is still a paucity of literature in the Asian setting compared with studies

conducted in the West and there are none that directly compared medical students with residents.

Another issue that deserves further attention is the role of non-cognitive domain skills in clinical teaching. Sutkin et al.'s (2008) review study described three main categories of characteristics of good clinical teachers: 1) physician characteristics, 2) teacher characteristics, and 3) human characteristics (Table 1). Approximately two-thirds of the characteristics were in non-cognitive domains (such as those involving relationship skills, emotional states, and personality types), and one-third in cognitive domains (such as those involving reasoning, memory, judgment, perception, and procedural skills). The article noted that cognitive abilities can be taught and learned, in contrast to non-cognitive attributes which are more difficult to develop and teach. Faculty development programmes currently often focus on traditional cognitive skills, such as curriculum design, large-group teaching, and assessment of learners (Searle, Hatem, Perkowski, & Wilkerson, 2006). In contrast, if non-cognitive domains are more important in contributing to outstanding teaching, they might need greater emphasis in the curricula of these workshops. The good news is that according to Schiffer, Rao, and Fogel (2003), non-cognitive behaviours are both measurable and alterable. Most of them have underlying neural networks which are entering our sphere of understanding. Hence non-cognitive skills, although much more challenging to develop than cognitive skills, have a potential to be developed. It is not clear whether there are differences in the distribution between cognitive and non-cognitive domain skills between the perceptions of medical students compared to residents of an effective clinical teacher.

The aim of this qualitative study is to explore the perceived characteristics of an effective clinical teacher among medical students compared to residents graduating from an Asian medical school and whether there is a difference regarding cognitive and non-cognitive domain skills.

## II. METHODS

### A. Participants

The participants consisted of final/fifth year medical students (M5s) from the Yong Loo Lin School of Medicine (YLLSoM), National University of Singapore (NUS) who were posted to the National University Hospital (NUH) to do their student internship posting in 2016. To ensure sufficient working experience, the National University Health System (NUHS) residents who had graduated from the YLLSoM and who had recently completed their intermediate specialty examinations were recruited. These were third to fifth

year residents in different programmes. Maximal variation sampling of the M5s and the residents of both gender, different ethnic groups and from different specialties (for residents only) was done.

### B. Design

A pragmatic qualitative research design (Savin-Baden & Howell Major, 2013) was used to get the participants to reflect on their own learning journey affecting their perceptions of the qualities that make an effective clinical teacher from the time they were first exposed to clinical medicine in year 3 (M3) of medical school to final year (M5) for the students, and to residency for the residents.

### C. Data Collection

Semi-structured one-on-one interviews using open-ended questions were conducted. A list of M5s doing their student internship programme in the various departments in NUH was invited via an e-mail invitation to participate in this study. To ensure maximal variation sampling, M5s of both gender and as far as possible different ethnic groups were recruited. As for the residents, through the Graduate Medicine Education Office in NUH, residents of both gender, from different ethnic groups and different specialties (both procedural and non-procedural) were selected from those who responded voluntarily to the invitation to participate in this study to ensure maximal variation sampling as residents from procedural specialties may have different perceptions of effective clinical teachers from non-procedural specialties.

Written consent after reading the Participant Information Sheet was taken from the interviewees before the interview was conducted in a quiet room. The interview was audiotaped and lasted between 30 and 45 minutes.

### D. Data Analysis

The audiotaped interviews were transcribed. As all the 12 interviews were conducted by the principal investigator (PI) (SO) and although the coding and official analysis of the interviews were done after all the 12 interviews were transcribed, the PI had taken note of themes emerging and decided on ending the interviews after no substantial new themes had emerged.

In the first phase, open coding, initial categories of the information on characteristics of effective clinical teachers by segmenting information and assigning open codes were formed. In the second coding phase, broader categories were developed through conceptually related ideas. The third phase involved selective coding where the individual categories were counterchecked with

Sutkin et al.'s (2008) categories of teacher, physician and human characteristics and whether they were in the cognitive or non-cognitive domains (Table 1). Further

related categories according to Sutkin et al.'s (2008) classification were brought together.

#### Physician Characteristics

P1	<i>Demonstrates medical/clinical knowledge</i>
P2	<i>Demonstrates clinical and technical skills/competence, clinical reasoning</i>
P3	<b>Shows enthusiasm for medicine</b>
P4	<b>A close doctor-patient relationship</b>
P5	<i>Exhibits professionalism</i>
P6	<i>Is scholarly (does research)</i>
P7	<b>Values teamwork and has collegial skills</b>
P8	<i>Is experienced</i>
P9	<i>Demonstrates skills in leadership and /or administration</i>
P10	<i>Accepts uncertainty in medicine</i>
P11	Others

#### Teacher Characteristics

T1	<b>Maintains positive relationships with students and a supportive learning environment</b>
T2	<b>Demonstrates enthusiasm for teaching</b>
T3	<b>Is accessible/available to students</b>
T4	<i>Provides effective explanations, answers to questions, and demonstrations</i>
T5	<i>Provides feedback and formative assessment</i>
T6	<i>Is organized and communicates objectives</i>
T7	<i>Demonstrates knowledge of teaching skills, methods, principles, and their application</i>
T8	<b>Stimulates students' interest in learning and/or subject</b>
T9	<b>Stimulates or inspires trainees' thinking</b>
T10	<b>Encourages trainees' active involvement in clinical work</b>
T11	<b>Provides individual attention to students</b>
T12	<i>Demonstrates commitment to improvement of teaching</i>
T13	<b>Actively involves students</b>
T14	<i>Demonstrates learner assessment/evaluation skills</i>
T15	<i>Uses questioning skills</i>
T16	<b>Stimulates trainees' reflective practice and assessment</b>
T17	<i>Teaches professionalism</i>
T18	<b>Is dynamic, enthusiastic, and engaging</b>
T19	<i>Emphasizes observation</i>
T20	Others

#### Human Characteristics

H1	<b>Communication skills</b>
H2	<b>Acts as role model</b>
H3	<b>Is an enthusiastic person</b>
H4	<b>Is personable</b>
H5	<b>Is compassionate/empathetic</b>
H6	<b>Respect others</b>
H7	<b>Displays honesty</b>
H8	<b>Has wisdom, intelligence, common sense, and good judgement</b>
H9	<b>Appreciates culture and different cultural backgrounds</b>
H10	<b>Consider other's perspectives</b>
H11	<b>Is patient</b>
H12	<b>Balances professional and personal life</b>
H13	<b>Is perceived as a virtuous person and a globally good person</b>
H14	<b>Maintains health, appearance, and hygiene</b>
H15	<b>Is modest and humble</b>
H16	<b>Has a good sense of humour</b>
H17	<b>Is responsible and conscientious</b>
H18	<b>Is imaginative</b>
H19	<b>Has self-insight, self-knowledge, and is reflective</b>
H20	<b>Is altruistic</b>
H21	Others

Note: Italics denotes cognitive characteristics;  
 Bold denotes non-cognitive characteristics.

Table 1. Classification of characteristics of outstanding clinical teachers (Sutkin et al., 2008)

### E. Trustworthiness

To enhance the credibility of the research, member checking on the accuracy of interview transcription was done. The same transcription was coded by the PI (SO) and a co-researcher (CT) and the themes and differences were discussed and resolved together. The themes were then discussed with another co-researcher (JF) who is an outsider to the research setting. To contribute to the dependability of the data, a reflexivity diary was kept to reflect on the process and the PI's role and influence on this study. This is because the PI is the person overall in charge of the residency training and has vast experience in teaching both undergraduate and postgraduate learners and has observed undergraduates seemingly valuing the willingness of time spent teaching in contrast to postgraduate learners who value effective teaching on the job. The PI emphasised to participants that whatever they mentioned in this study would not affect them in any way in their assessments, selection into a residency programme, job selection nor career progression. As a point of note, none of the interviewees mentioned any of the authors by name in the interviews when describing an effective clinical teacher.

### III. RESULTS

A total of six final year medical students from the YLLSoM consisting of three males and three females with a mean age of 23 years old were interviewed. As for the residents group, they consisted of four males and two females. There were two internal medicine year 3 residents, one paediatric year 5 resident, one emergency medicine year 4 resident, one orthopaedic year 3 resident

and one urology year 4 resident with a mean age of 29 years (range 26-33 years). All of them were of Chinese ethnicity.

The characteristics of effective teachers were mapped onto Sutkin et al.'s (2008) review paper (Table 1) and while the majority of the characteristics could be mapped, those characteristics not able to be mapped would be considered as new characteristics. Referring to the summary of results in Table 2, the top characteristic identified equally by the medical students and residents group was *approachability*, in the non-cognitive domain. This was described as being "relatable, personable, forming good rapport, warm, able to remember students' names, having a sense of humour, sharing personal experience". Medical student 2 aptly described its importance: "Approachability in being willing to teach is an inborn trait. It acts as a screening tool. It opens the door for a student to decide whether or not this clinical tutor is someone she is likely to approach to learn from." Interestingly, while both the medical students and residents group unanimously identified the need for a clinical teacher to have a threshold level of clinical competence, followed by a teacher who is warm and approachable with a passion to teach, this latter requirement was emphasised as particularly important in undergraduate teaching. In contrast, a postgraduate trainee/resident was able to accept a less warm but skillful clinician to learn advanced surgical skills from as they were more able to do self-directed learning being already in a training programme and they could observe and learn.

Total	MS	R	Characteristics	Teacher	Physician	Human	Cognitive	Non-Cognitive
10	5	5	Approachability	X (T3)		X (H4)		x
9	3	6	Passion/enthusiasm in teaching/engaging	X (T2)				x
8	5	3	Provide effective explanations, answers to questions, and demonstrations (T4) Demonstrate clinical and technical skills/competence, clinical reasoning (P2)	X (T4)	X (P2)		x	
7	3	4	Creates conducive learning environment <ul style="list-style-type: none"> <li>• patient (H11)</li> <li>• humble (H15)</li> <li>• learning without fear/non-threatening,</li> <li>• open to suggestions/questions</li> </ul>	X (T1)		X (H11, H15)		x
7	3	4	Role modeling <ul style="list-style-type: none"> <li>• Learn art of Medicine</li> <li>• Patient interaction, shows respect (H6)</li> <li>• Shows by example</li> <li>• Communication (H1)</li> </ul>	x	x	X (H1, H6)		x
7	2	5	Teach at appropriate level/know learning objectives	X (T6)			x	
7	3	4	Sacrifice time	x			x	
6	3	3	Realistic/concrete learning	X (T6)			x	

6	2	4	Feedback, supervision, assessment for learning	X (T5, T19)			x	
5	2	3	Knowledgeable/up to date/evidence-based		X (P1)		x	
5	4	1	Exam-oriented	x			x	
4	2	2	Inspirational to learning	X (T8, T9, T18)				x
4	1	3	Clinical thinking/Demonstrate to impart/pedagogy	X (T9)	X (P2)		x	
3	2	1	Nurturing/encouraging/compassion for students & team	X (T11)		X		x
2	0	2	Allows hands-on/encourages trainees active involvement in clinical work	X (T10)				x
			Others: Strict, elocution, fair/moral compass (H13, H7), innovative (T12), directs learners, worldly-wise; empathy (H5), interpersonal skills, humour (H16)					

Note: (T), (P) and (H) refer to the specific Sutkin et al.'s (2008) classification as given in Table 1.

Table 2. Characteristics of effective teachers identified by Medical Students (MS) and Residents (R) classified into teacher, physician and human characteristics and cognitive vs non-cognitive domains and mapped onto Sutkin et al.'s (2008) Classification (Table 1)

The second most important characteristic identified was having a *passion/enthusiasm in teaching*, in the non-cognitive domain. This was described as “engaging, enthusiastic to help residents learn, enthusiasm/infectious attitude rubs off, lively, draws out from learners, takes time to explain to students”. Resident 5 explained: “Passion is actually demonstrated in the knowledge you display. Because when you are interested in something, you can go on to explore the depth. People who display passion are able to depict the subject matter in a very interesting, personal and in a lively way. Passion is also about the desire to learn about things and to contribute to things. So in a sense teaching is not a passive tool for the diffusion of students ... it’s also the ability to be able to draw things out from the students ...draw contribution or ideas...”. Passion as a characteristic was mentioned by all the residents but not by all of the medical students.

The third most important characteristic identified can be summarised as “*providing effective explanations, answers to questions, and demonstrations*” (a teacher characteristic) and “*demonstrates clinical and technical skills/competence, clinical reasoning*” (a physician characteristic) in the cognitive domain. This was described as “being able to break down concepts into digestible chunks; being able to synthesise and teach in understandable way; how to think, synthesise and use information; concise, targeted, clear thinking; headings, subheadings, elaborations; clarity in giving instructions and thought so that everyone is on the same page; demonstrate better way of presenting and more accurate way of physical examination”. This was identified more in the medical student group than in the resident group.

Most of the other characteristics generally coincided with Sutkin et al.'s (2008) paper. Among the two

cognitive domains skills were “*teaching at appropriate level/known learning objectives*” as well as being willing to “*sacrifice time*” demonstrating commitment for student education. The teachers who sacrificed their time gave additional teaching sessions and did not rush through. The medical students and the residents identified this characteristic as something they really valued in undergraduate teaching. Another characteristic in the cognitive domain was “*Realistic/concrete learning*” was described as “bedside teaching; teaching with practical aspect, case-based teaching; use of clinical pictures, electrocardiogram, clinical quiz and learning aids”. This form of learning was identified as being effective by both the medical students and residents equally. In contrast, “*feedback, supervision, assessment for learning*” described as “being able to discuss in detail as physically present; balance between supervision and resisting urge to take over in an operation; good feedback with balance of positive and negative points done in a fun and nice way” was identified more by the residents than the medical students group.

Being “*exam-oriented*” i.e., the teacher being able to prepare the students well for exams, was notably a characteristic identified mainly by the medical students but was one not identified at all in Sutkin et al.'s (2008) paper nor other more recent references. To quote medical student 1, “I guess especially for medical students, it is whether this tutor prepares us well for the exams and in terms of meeting our academic objectives.” Medical student 5: “He teaches us very exam focused and he synthesises all the information very succinctly for exams.”

The medical students were specifically asked whether they identified a difference in the characteristics they valued in their teachers between when they were first

introduced to clinical medicine in M3 compared to now in M5. The students almost unanimously expressed that in M3, as they had just been exposed to clinical medicine, they identified the need to build up their medical knowledge through more content-heavy didactic style of teaching that could be described as more of spoon-feeding than self-directed learning. Medical student 5 said, “Year 3 is more introductory kind of year so we don’t know anything. So what a good tutor to me in year 3 was whoever can teach me approaches, impart didactic teachings like knowledge.” They valued connections back to the basic sciences taught in their first two years of medical school and teachers who taught them how to approach patients. They were open to the gradual introduction of self-directed learning but it should not hold up the pace of the lesson if the students were unable to answer. In contrast, at the time of interview they were in M5 and they had two main aims. Their first aim was to look for good role-models for their upcoming internship and choice of residency for some. Hence, they appreciated bedside teaching with close supervision and feedback on medical knowledge applied to actual clinical care. Moreover, bedside examination skills and patient communications cannot be studied at home. At M5, they valued more self-directed learning as they were more equipped to search for information themselves unlike when they were in M3. They also greatly valued preparation for their final exams which would involve clinical examination in the form of Objective Structured Clinical Examination. In this aspect, they valued teachers who could teach them clinical reasoning on how to synthesise information to be applied to management of actual patients. The second aim had become more important as their final exams drew near. This feedback was also expressed by the residents when they recalled on what they looked for in their undergraduate years.

For the residents who were in their third year of their residency and beyond, they identified the need for more active, self-directed learning. They mentioned the need to ask the ‘why questions’ and to learn evidence-based clinical practice. They appreciated experienced tutors who shared pearls and personal experience with them. They preferred to learn from good teachings during ward rounds and clinics and mentioned that didactic teaching was less important unlike in their undergraduate days and also as a first year resident where they still appreciated more spoon-feeding. As a more senior resident, they found discussions, greater analysis, asking questions to identify knowledge gaps, opportunity to present and testing useful because they already had a fund of medical knowledge.

#### IV. DISCUSSION

The results of this study suggest that there are differences in the perceived characteristics of an effective clinical teacher among medical students compared to residents. The results support Jonassen’s theory of constructivism (1991) as seen by the medical students at the beginning of their clinical year (M3) wanting more didactic teaching to ‘spoon-feed’ them with medical knowledge. As these students move on to become more senior in M5, and then residency, they start appreciating teachers who help them become more self-directed learners. These more senior learners also value feedback to help them deal with more complex ill-defined problems that they encounter during their daily clinical work. This is supported by more residents than medical students identifying feedback and supervision as well as clinical decision making/thinking as important characteristics of an effective clinical teacher (Table 2).

It is also interesting to note that the top two characteristics of approachability and passion/enthusiasm in teaching are both in the non-cognitive domains. In fact, they are probably fundamental attributes that make a good teacher into a great one as they lead to a lot of teaching experience coupled with feedback from the learners that make them become good at simplifying and explaining concepts well, especially in undergraduate teaching. For the students beyond a baseline clinical competence, they value clinical teachers who want to teach rather than those who may be excellent top clinicians who do not possess the soft skills and the approachability for the students to want to have the courage to learn effectively from him/her. In contrast, the residents are willing to accept less ‘warm’ teachers if they are able to learn advanced clinical skills from them, particularly in the procedural specialties.

One of the characteristics that has not been identified in any of the references, including Sutkin et al.’s (2008) review paper is that of being exam-oriented. This was a characteristic identified by four of the medical students but only by one of the residents who mentioned it while recalling his undergraduate days. This is not too surprising because Frambach et al. (2012) have found that Asian students tend to strive for success and to rank among the top achievers in an examination. The fact that the YLLSoM is Asia’s leading medical school (QS Top Universities, 2015; Times Higher Education, 2015) and hence the crème de la crème of Singapore’s students study at YLLSoM as seen by both the 10th and 90th percentiles of Medical students getting all A grades in their Singapore-Cambridge GCE A-level admission scores (National University of Singapore, 2019) can explain the exam-orientedness of the students. Moreover,

Singapore practices meritocracy (Prime Minister's Office, 2015) and in a small country of only 719.1 km<sup>2</sup> with a population of 5.35 million (World Bank, 2015) with only three public healthcare clusters, doing well in exams is seen as a tried and tested way of securing a good future. Failing in a high-stakes exam such as the final Bachelor of Medicine and Bachelor of Surgery (MBBS) exams will delay one's progression to the next stage of one's career such as admission to a residency training programme, and in a small country like Singapore where it is perceived to have few opportunities of starting afresh, it is not surprising that so much emphasis is placed on doing well in exams and a teacher who is able to prepare students well for exams is greatly valued.

There are several limitations to this study. Although we had wanted to recruit interviewees from different ethnicity, all 12 who responded to our invitation were Chinese, though participating in a multi-cultural and multi-ethnic public school. Another limitation is that this study only explores the perceptions of the learners themselves. It will be more balanced if the viewpoints of the teachers are obtained as well.

## V. CONCLUSION

This study suggests that there are differences in the perceptions of an effective clinical teacher between medical students compared to residents. Medical students valued a more didactic spoon-feeding type of teacher in their earlier clinical years. However, final year medical students and residents valued feedback and role-modelling at clinical practice. The top two characteristics of approachability and passion for teaching are in the non-cognitive domains. The results of this study will help to inform educators of the differences in a learner's needs at different stages of their clinical development and to potentially adapt their teaching styles. In addition, it is also possible for certain non-cognitive domain skills to be developed through recognition of clinical teachers who are role models in showing by example the art of the practice of Medicine and being able to create a conducive non-threatening learning environment. There are definitely faculty development programmes which target at how to develop a conducive learning environment.

### Notes on Contributors

Shirley Ooi, MBBS(S'pore), FRCSEd(A&E), MHPE(Maastricht) is senior consultant emergency physician at NUH and associate professor at NUS. She was the Designated Institutional Official NUHS Residency programme at the time of the study. Currently she is the Associate Dean at NUH. This study was her MHPE thesis. She reviewed the literature, designed the study, conducted the interviews, analysed the transcripts and wrote the manuscript.

Clement Tan, MBBS(S'pore), FRCSEd (Ophth), MHPE(Maastricht), is associate professor, senior consultant and head of the Department of Ophthalmology, NUS and NUH. He was the first author's local MHPE thesis supervisor. He co-analysed the transcripts and approved the final versions of the manuscripts.

Janneke M. Frambach PhD is assistant professor at the School of Health Professions Education, Faculty of Health, Medicine and Life Sciences, Maastricht University, the Netherlands. She was the first author's MHPE thesis supervisor. She supervised the study from the beginning to the final stage of manuscript writing with its revisions.

### Ethical Approval

This study was reviewed and approved by the NUS Institutional Review Board (approval no. 3172), which considered the letter of invitation for recruitment of participants, participant information sheet, written informed consent for the audio-recordings of the one-on-one interviews, interview guide and confidentiality of participants.

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### Funding

No grant nor external funding was received for this study.

### Declaration of Interest

The PI as the interviewer emphasised to the participants that whatever they mentioned in this study would not affect them in any way in their assessments, selection into a residency programme, job selection nor career progression. Moreover, their participation was entirely voluntary. The other two authors had no conflict of interest.



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