Factors related to university teaching that influence academic success of international medical students in China
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Abstract

Background

Academic success is extremely important for international medical students enrolled in Chinese universities, as it affects their performance in their licence exams and future work opportunities. However, insufficient research has been conducted on university academic staff’s awareness of teaching-related factors that affect their students’ academic success.

Methods

A purposive sampling approach was taken in the study to recruit academics teaching in medical universities in China. The selection of informants was based on the subject they taught and their gender, experience of teaching international medical students, educational background and career stage. Semi-structured interviews were conducted with academics (N = 36) between November 2020 and January 2021 at two medical universities in China. Each interview lasted between 30 and 70 minutes and was audiotaped, transcribed verbatim and thematically analysed.

Results
The teaching factors that academics perceived to have an important influence on the success of students were (i) pedagogy and content alignment; (ii) language barriers; (iii) resource management and the learning environment; and (iv) educator attributes and guidance.

Conclusions

University faculties and departments involved in teaching international medical students should ensure that their academic staff are supported in their ongoing professional development and provided with resources to enhance their teaching quality. The four factors (and their sub-factors) listed above should be prioritised in such staff training.

Keywords

academic success, international medical students, China, medical education, university teaching
Introduction
With the internationalisation of China’s universities over the past two decades (Dang et al., 2013; Jin & Horta, 2018), medicine has emerged as the most popular programme, after the Chinese language, for international students to pursue (Zhou, 2016). The Bachelor of Medicine and Bachelor of Surgery (MBBS) programme, taught in English, is designed and implemented by universities with the support and supervision of China’s Ministry of Education (MOE) (Huang, 2014). An example is the document Quality Control Standards of Basic Medical Education (in English Medium) for International Students in China, which was published in 2020 by the China Education Association for International Exchange and the International Medical Education Committee, with the support of the International Department of the MOE. This document was aimed at further standardising MBBS education across Chinese universities and effectively improving training quality, thus promoting its sustainable development.

The MOE has authorised 45 universities to recruit international medical students (Xie, 2021). The World Health Organization (WHO) recognises these universities in its Directory of World Medical Schools, which means that international graduates holding a Chinese MBBS degree are eligible to attend licence exams in their home countries. Examples include the Medical Council of India Screening Test, the United States Medical Licensing Examination, and the UK Professional and Linguistic Assessment Board. Students regard this as one of the greatest advantages of studying MBBS in China, in addition to other benefits such as less demanding admission requirements, lower costs, and a safe and stable society (Zhou, 2016).

The MBBS programme typically takes six years to complete, with five years devoted to courses in natural science, the Chinese language, basic science medicine, and clinical subjects, and a one-year internship in a Chinese hospital or a hospital in the student’s home country. Most MBBS students are from low-income Asian and African countries, where the demand for health professionals is high (Liu et al., 2017). The majority choose to return home to establish their careers after completing the MBBS programme, but some remain to pursue further studies (Fan et al., 2020; Huang, 2019). Jiang and Sun (2007) found that 87.4% of MBBS students planned to develop medicine-related careers after graduation and hoped to make a significant contribution to the health workforce of their home countries, or planned to migrate to other high-income countries (Han & Guo, 2009; Li & Sun, 2019). The quality of the Chinese MBBS education they receive is likely to influence their licence exam performance and their future employment positions. The reputation of these courses is therefore key to the sustainable development of China’s medical education for international students (Zhou, 2016).

Medical licence exams are necessary to evaluate the teaching provided by medical schools and the learning outcomes of the graduates they produce (Han & Guo, 2009). The success rate of MBBS graduates in these exams reflects the extent to which China’s MBBS education meets international standards (Mao et al., 2012). However, the results have to date fallen been below those of several other countries. For example, more Indian students study in China than in any other country, and they are required to pass the Foreign Medical Graduate Examination (FMGE) to practise medicine in India (Muthyanolla, 2022). The total number of Indian students who studied in China and sat the FMGE between 2015 and 2020 was 43,632, but the average pass rate was only 12.51% (Muthyanolla, 2022). Similarly, for Nepalese students who studied in China, the pass rate in the Nepal Medical Council (NMC) Examination from 2016 to 2018 was only 34.3%, behind that of Nepalese graduates from Nepal (80.3%), the Philippines (74.8%), Bangladesh (60.9%), Pakistan (58.4%), India (49.2%), Russia (44.6%), and Ukraine (40.9%) (Aryal, 2018). These results indicate that the majority of China-educated MBBS graduates do not have the expected level of professional knowledge or skills.
The selection of academics to teach international MBBS students is an important consideration. Priority is usually given to those with overseas educational or other experience, as this group of teachers are considered to be proficient in English and competent in intercultural communication (Yu et al., 2022). To elevate teaching quality, Chinese universities also take measures such as sending academics for training in other countries (Zhang et al., 2014). China’s MOE also established a Teacher Training Centre for studying medicine at Tianjing Medical University in 2010 (Liu et al., 2021). This centre aims to improve the teaching standards and English teaching skills of medical teachers of international students in China and to improve the quality of training of international students and the level of education management services (Liu et al., 2021). The centre takes a mixed-mode approach consisting of face-to-face training such as demonstration teaching, oral English training for foreign teachers, and online training such as lectures by domestic and foreign experts and teaching seminars (Yu et al., 2023).

Although the successes of medical education for international students in China have been acknowledged in recent studies, several problems remain. These include the lack of a unified training programme for international medical students (Liu et al., 2021b), language barriers between lecturers and students (Ding, 2016; Huang, 2019), ineffective teaching pedagogy (Yang et al., 2019a), insufficient qualified and experienced academic staff and poor teaching resources (Ding, 2016; Huang, 2019; Wang et al., 2018), the lack of a robust quality assurance system (Liang & Liu, 2019), classroom discipline issues (Zeng & Sheng, 2019), and poor student quality (Ma et al., 2018; Huang, 2019). However, many of these studies were based on the working experiences and subjective reflections of the authors, and thus they lacked empirical evidence. Some Chinese studies have taken a more objective quantitative approach by surveying international students and gathering their opinions, but the views of academic staff have rarely been solicited. The study reported here was designed to address this important issue by interviewing academics.

To the best of our knowledge, this is the first Chinese-focused study to investigate the beliefs of academic staff regarding the pedagogical factors that can contribute to the success of international medical students. The findings provide a better understanding of the challenges faced by international medical students in China and offer guidance for improving the quality of university teaching, to ensure that graduates have the necessary expertise and to maintain the reputations of the universities.

Methods
Ethics and consent
This study was approved by the Ethics Committee of Xuzhou Medical University (XZMU20200028) and the Institutional Review Board of Nanjing Medical University (NJMUIRB774) in September 2020. All of the informants gave written and oral informed consent to participate in the study.

Research sites
The study was conducted in two medical universities (A and B) located in Jiangsu Province in eastern China, which has a well-developed economy and offers high-quality education. We selected these universities due to the availability of suitable academic staff and because they were representative of the MBBS programmes taught in other universities in the province. Both had accepted international MBBS students for over 15 years, so it was reasonable to regard them as relevant sites at which to gather the perspectives of academics engaged in teaching.

Both universities applied similar MBBS curricula, which followed the requirements of the MOE. International and Chinese MBBS students took separate courses and did not attend the same classes. English was the principal teaching medium of the courses for international students. Most of these students were from developing Asian and African countries, and some were far from proficient in English.

Informants
We took a purposive sampling approach in this study. We based our selection of interviewees on the subjects they taught and their gender, years of teaching international medical students, educational background, and career stage. Our aim was to obtain a heterogeneous sample of medical teaching staff from the two universities. Academics were approached individually via phone calls and WeChat invitation with the help of two ‘gatekeepers’. Our target sample size before recruitment was approximately 30, but we increased this to 40 to achieve data saturation (Morse, 1991). Of these, two declined the interview invitation and another two initially agreed but later withdrew by failing to respond to the researcher’s follow-up text messages.

Thus, a total of 36 academic teaching staff (17 men, 19 women) were recruited, of whom 2 taught Chinese, 3 taught nature science, 11 taught clinical subjects, and 20 taught basic medical science. Their experience of teaching international students ranged from 2 to over 13 years, and all were responsible for teaching the same subject to both Chinese and international students (Table 1).
Table 1. Participants’ profiles.

| Participant no. | Gender | Subject taught               | Years of MBBS teaching | Academic rank       | Overseas education/working experience |
|-----------------|--------|------------------------------|------------------------|---------------------|----------------------------------------|
| P1              | F      | Chinese                      | >11                    | Lecturer            | None                                   |
| P2              | M      | Anatomy                      | 9                      | Professor           | USA                                    |
| P3              | F      | Community Medicine           | >10                    | Lecturer            | None                                   |
| P4              | F      | Physics                      | >11                    | Associate professor | None                                   |
| P5              | M      | Chemistry                    | >10                    | Professor           | USA                                    |
| P6              | F      | Biochemistry                 | >12                    | Associate professor | USA                                    |
| P7              | M      | Physiology                   | >13                    | Lecturer            | USA                                    |
| P8              | F      | Immunology                   | >3                     | Professor           | Japan                                   |
| P9              | F      | Microbiology                 | >11                    | Associate professor | USA                                    |
| P10             | F      | Histology & Embryology       | >13                    | Associate professor | None                                   |
| P11             | M      | Pathology                    | 6                      | Associate professor | USA                                    |
| P12             | F      | Pathoanatomy                 | >4                     | Lecturer            | None                                   |
| P13             | F      | Stomatology                  | >5                     | Lecturer            | None                                   |
| P14             | F      | Mathematics                  | >5                     | Associate professor | None                                   |
| P15             | F      | Anesthesiology               | >8                     | Professor           | USA                                    |
| P16             | F      | Physiology                   | >3                     | Lecturer            | None                                   |
| P17             | F      | Paediatrics                  | >12                    | Professor           | Italy & USA                            |
| P18             | M      | Surgery                      | >12                    | Associate professor | Japan                                   |
| P19             | M      | Human parasitology           | >8                     | Associate professor | France                                 |
| P20             | M      | Diagnostic radiology         | >2                     | Associate professor | Hong Kong                              |
| P21             | F      | Cell biology                 | >10                    | Associate professor | USA                                    |
| P22             | M      | Pharmacology                 | >2                     | Associate professor | Japan                                   |
| P23             | F      | Diagnostic radiology         | >2                     | Associate professor | Hong Kong                              |
| P24             | M      | International medicine       | >13                    | Associate professor | UK                                     |
| P25             | F      | Diagnostics                  | >5                     | Lecturer            | None                                   |
| P26             | M      | International medicine       | >13                    | Professor           | Germany                                 |
| P27             | F      | Obstetrics & Gynaecology     | >13                    | Associate professor | None                                   |
| P28             | M      | Anatomy                      | >14                    | Professor           | USA                                    |
| P29             | F      | Human parasitology           | >10                    | Associate professor | USA                                    |
| P30             | F      | Hygienics                    | >6                     | Associate professor | USA                                    |
| P31             | M      | Pharmacology                 | >2                     | Lecturer            | USA                                    |
| P32             | M      | Chinese                      | >9                     | Associate professor | USA                                    |
| P33             | M      | Paediatrics                  | >18                    | Professor           | USA & Canada                           |
| P34             | M      | Surgery                      | >11                    | Professor           | None                                   |
| P35             | M      | Surgery                      | >6                     | Associate professor | UK & USA                               |
| P36             | M      | Physiology                   | >8                     | Professor           | Singapore & USA                        |
Data collection
A semi-structured interview was conducted with each participant between November 2021 and January 2022. Only the first author and one participant were present in each interview. Academics from University A participated in face-to-face interviews in their offices or a small meeting room that was perceived by the participants to be comfortable and quiet, while the interviews with academics from University B were conducted online (due to the COVID-19 pandemic). Both the face-to-face interviews and the online interviews were audio-recorded and notes were taken throughout. The interview questions, which were pilot-tested, addressed the participants’ views on factors affecting student success, and their recommendations for improving teaching quality at the classroom and organisational levels.

The academics were initially briefed about the probable length of the interviews and the purpose and significance of the study. To conform with ethical requirements, all interviewees were assured of their anonymity and agreed to the audio recording and dissemination of the findings. Each interview was conducted in Chinese and lasted for around 30 to 70 minutes.

Data analysis
A thematic approach was taken to the data analysis (Braun & Clarke, 2006), with the audio recordings later transcribed verbatim. These Chinese transcripts were coded manually by the primary researcher, who immersed herself in the data and noted down her initial ideas on emergent themes. Initial codes were generated based on identified key words and phrases. These codes were then summarised into potential themes. The primary researcher translated the codes and themes into English. The research team then discussed, adjusted, and reached a consensus on a final set of categories. The integrity of the process was ensured through member checking, peer auditing and self-reflection. The primary researcher kept a self-reflection journal throughout the process to minimise the effects of her own background and work experience on the interpretation of the data.

Results
Theme 1: Pedagogy and content alignment
1.1 Challenges in teaching pedagogy

Most of the academics perceived their teaching methods and practices to have a major influence on international students’ learning. However, they perceived a mismatch between their teaching approaches and the learning characteristics of these students. They mainly relied on traditional teacher-centred lecturing and tended to read verbatim from slides, without giving adequate further explanations or offering practical examples that could enhance the students’ comprehension of the subject. Some noted that as a learning approach, lectures may not be suitable to meet international students’ needs. A teacher of clinical medicine commented that in a lecture on clinical manifestations and diagnoses of diseases, the students were primarily concerned about the treatment and recovery aspects. The teacher suggested:

*The students enjoyed learning about clinical treatments maybe because they thought that it would be useful for their clinical work in the future. However, treatment is only briefly introduced in this class.* (P25)

International students asked more questions than Chinese students and were willing to interrupt the class to express their opinions. This led the academics to consider how they could better communicate with them and how to improve the quality of their teaching. Most felt that much of the current teaching involved spoon-feeding information and lacked interaction. Lecturers were failing to grasp students’ attention and hold their interest in class, which often affected their exam performance. Interviewees felt that teaching innovations such as case-based learning (CBL) and problem-based learning (PBL) should be used to teach international students, because this type of teaching mode is more heuristic and thus encourages students to learn more actively. They suggested that CBL and PBL would increase the involvement of international students in learning activities. They could also make more frequent use of individual and group presentations and discussions, encourage students to ask questions, guide students to think, and try flipped class teaching (setting preparation assignments on a lecture topic before presenting the lecture). However, the academics also felt that implementing these changes would be a challenge for them, because it would place more demands on their language skills, subject knowledge, ability to listen and respond to students, and control the class. One of the few academics who already involved international students in interactive class learning activities reported positive changes in the performance of these students:

*International students are not interested in the traditional lecturing we use to teach Chinese students. Very few students listen carefully in class. I usually ask international students to summarise the content of the previous lesson in front of the whole class. They participate very actively and prepare well. I think international students like to show themselves in public. If I take advantage of this characteristic of theirs, I can stimulate their passion for learning.* (P31)
International students’ basic knowledge and learning were poorer than those of Chinese students. The lecturers acknowledged the diverse academic abilities of international students and their different cultural backgrounds and agreed that they should adjust their teaching approaches accordingly. They also believed that they should give culturally relevant examples in class that the students were familiar with, make timely summaries of key knowledge points, give them practice assignments to complete after class, cover exam points, and provide timely feedback on their assignments. An academic teaching radiology gave the following example:

*For international students, you have to start from the basics. For example, in my [radiology] class, there is a CT value, high or low. High is bright, low is dark. You have to explain this foundation setting first; otherwise, they would become confused. Doing this sort of thing could help them but would require academics to take more time to prepare for class.* (P19)

The interviewees reported that real clinical cases should be integrated into basic medicine lectures to help international students understand them, and they thought that the students would learn better with case examples. Academics without extensive clinical experience but who taught biochemistry, microbiology, immunology, and parasitology found this to be a challenge. They said that they had to provide more than theory and facts and include relevant clinical knowledge to properly teach their students. An academic teaching biochemistry who had a background in biology stated as follows:

*Students have asked me some clinical questions, which shows that they have this demand. This demand actually reminds me that I should include clinical knowledge in my teaching. This could make my class more attractive and make them realise that my course is very helpful for their clinical study in the future and can help them solve clinical problems. In addition, it can make students realise the importance of my course, at least for now, and increase their learning enthusiasm. I’ve already started learning relevant clinical knowledge.* (P6)

Some of the academics also acknowledged that their lecture slides probably needed to be more interesting. They stated that it may be necessary to use teaching aids in addition to writing on the blackboard, such as video, audio, and animation, to make the classes more dynamic and easy to understand for students. An academic teaching pharmacology mentioned how he used online technology to make the learning in his class more effective.

*I like to visit YouTube to find some videos about the mechanisms of drugs to show in the class. Maybe my explanations are not very good, but the videos explain very well, which can help deepen students’ understanding. Moreover, I feel that playing videos when students are sleepy can increase their attention.* (P22)

### 1.2 Alignment of teaching content with licence exams

Over a quarter of the interviewees noted that a primary reason why many international students lack interest in learning is that the current course content and resources do not correspond closely enough to the requirements of the licence exams. Academics usually teach the knowledge that they think is important, and this may not precisely match a curriculum based on the licence exam. A combination of academics’ specialist knowledge and a prescribed curriculum is required. This is a critical issue, as students will be more motivated to learn if they perceive that what they are asked to learn will be useful for passing examinations and in their working lives. However, some of the academics interviewed argued that it would be difficult to address all of the licence exam needs of students from diverse countries, as the content is likely to vary. Developing a more contextualised curriculum therefore seems essential, as explained by an academic teaching anatomy:

*One of the key points of our teaching is to help students pass licence examinations. If a student does not pass the exam, he/she will not even qualify for matching hospitals. This is true for both Chinese students and foreign students. Teaching and licence examinations cannot be separated. If we want to help students pass the licence exam, teaching activities should play a guiding role … The passing rate for licence exams is the most important standard measure of a medical university. Practice is the sole criterion for testing truth.* (P2)

### Theme 2: Language barriers

In addition to teaching pedagogy, language barriers were identified as a significant challenge to successfully teaching international students. Most of the interviewees indicated that language differences and difficulties negatively influenced their teaching and students’ learning quality. They also offered various potential solutions. These Chinese academics spoke English as a foreign language, while international students spoke English as their first or second language (although many were far from perfect in English). This is not a criticism of either group, but merely reflects the actual situation. Communication was therefore limited because the academics were not necessarily fluent in English, and neither were many of the students. The academics often found it difficult to understand their English accents and expressions, as they may not speak standard American or British English, particularly those from India, Nepal, and Pakistan.
The academics admitted that while they generally had a good command of medical English in their own field after years of teaching, they still struggled with day-to-day and cross-disciplinary English. This limited vocabulary outside of their field affected their teaching and was one of the main reasons why they often resorted to reading verbatim from slides rather than explaining concepts in their own words, and why they avoided engaging with students. Consequently, their students became bored during class and were sometimes annoyed by the poor communication. One academic who taught surgery noted the difference between Chinese and international students in terms of language in theory lectures.

*If it is a Chinese class, the academic has many methods of teaching. He has eloquence and rich experiences; he can solicit and quote from others when giving lectures. However, in case of teaching foreign students, due to the language barrier, academics cannot express themselves 100% smoothly. They can only communicate with students in the simplest way, so they cannot always respond appropriately to students. If they cannot attract the students, the students will lack interest in the class. Naturally, they do not devote themselves to learning.* (P35)

Academics teaching clinical medicine who were also responsible for clerkships and internships at hospitals indicated that it was hard to translate some Chinese words concerning a patient’s symptoms into English. Sometimes the translation was not completely accurate, and international students could not comprehend explanations delivered in conversational Chinese. Therefore, the effectiveness of clerkship and internship learning in clinical medicine was adversely affected because of language barriers, as one academic teaching internal medicine explained:

*Take the symptoms of angina pectoris for example. When I talk about angina pectoris to Chinese interns, I use the Xuzhou dialect, which is very easy to understand. However, it is difficult for me to convey the clinical symptoms reflected by most patients to foreign students through a more appropriate word, because the pain reflected by the patient is not the oppressive feeling mentioned in the textbook. We cannot simply transfer the knowledge from books to students; we have to combine it with our clinical practice. However, sometimes, it is very difficult to translate properly.* (P25)

**Theme 3: Resource management and learning environment**

**3.1 Management of teaching resources**

Over half of the interviewees stated that issues with teaching resources also affected teaching and learning. Four sub-issues emerged within this theme, as follows.

**3.1.1 Demand of textbooks and teaching materials**

Twelve academics complained that they lacked easy access to necessary textbooks, English question banks, and other relevant teaching materials, such as reference books and videos. Universities did not mandate or provide any particular textbook for academics to use, and the academics had to seek out textbooks or create their own materials by drawing on various English and Chinese sources. If the textbooks were different from the students’ own, they could find it difficult to understand the lectures. The students were at times not assigned any textbooks or relevant learning materials. In addition, academics responsible for different modules or units in a course often used different textbooks, which led to inconsistencies. Thus, they felt that experts should develop good textbooks to help students understand and review the knowledge learned in the lectures, and they suggested that universities should purchase specialised English books, medical videos, and question banks for staff and students to use. One academic teaching gynaecology commented on her difficulty with using textbooks as follows:

*Our Clinical College once gave us some textbooks, but I think the versions of those books were relatively old. I have not seen updated books. In those books, old methods of screening gynaecological cervicitis, which were used one or two decades ago, were introduced.* (P27)

**3.1.2 Need for collaborative lesson planning**

Seven academics felt that it was important to engage in collective lesson planning to ensure effective communication. This approach is currently lacking, but can be important for a teaching team to share experiences and discuss which knowledge points are the most important for students to master. These planning sessions can be used to discuss the application of flipped class teaching and how to properly create synergies among different topics taught by different academics. Experienced academics could also advise new members of staff about how to teach international students through collective lesson planning. Those inexperienced in teaching international students expressed their need to receive teaching tips about appropriate pedagogies, and to obtain feedback from more experienced lecturers. However, in most departments, and particularly in clinical medicine subjects, collective lesson planning and guidance was lacking, as the teachers were busy with their own clinical work and research:
Theoretically, there should be collective lesson planning, but it cannot be done in practice ... Teachers have their own interpretations of knowledge and lecturing methods, and collective lesson preparation has little impact on them ... Basically, teaching has been weakened and become a mere formality. There is no teaching demonstration for new teachers anymore. The supervision mechanism has gradually disappeared. Now the overall orientation no longer takes teaching as the main evaluation index, but mainly takes SCI publications. (P24)

### 3.1.3 Weak teaching supervision system

Seven academics reported that universities lacked a sound system for supervising teaching quality. This may lead academics to conclude that it makes no difference whether their teaching is of a good standard. Without a system that rewards good performance and penalises poor performance, academics have no incentive to teach well. Some of the interviewees stated that strengthening the supervision of teaching through regular observation by experts and spot-checking lecture quality would benefit academics.

*The School of International Education needs to establish a system or assessment standard and implement rewards and punishments in each teaching and research department. If there is no difference between good and bad teaching, teachers will not be motivated.* (P33)

### 3.1.4 Inadequate clinical teaching resources

Five senior clinical academics mentioned that there was a shortage of well-qualified personnel to teach theory, clerkships, and mentoring internships in hospitals. Due to the high turnover of staff, some departments lacked a stable team responsible for teaching international students. They were often taught by recently hired academics or new doctors who had minimal or no prior teaching experience. Their approach was limited to reading their notes or slides out loud, without any explanation or discussion. Those with teaching experience felt that universities and hospitals should attach more importance to consistency in teaching international students, and should introduce incentives to encourage young, qualified doctors to participate in teaching. A perceived need to train new academics for future teaching work was observed:

*During the clerkship, we had two teachers to teach 25 international students. The venue space and teachers were not enough ... For foreign interns, an internship was more like clerkship learning, just for a visit, because some teachers could not speak English and they were very busy. Foreign interns could not operate, due to doctor–patient relationship concerns. They could not receive much guidance ... You know, this is a problem.* (P24)

Three academics also mentioned that their course syllabuses were obsolete. A senior academic who taught paediatrics said it was imperative to discuss with international students which specific diseases were common in their own countries, and thus what they needed to learn about. The course syllabus could then be updated accordingly. The students could then more easily relate to the content being taught in class. These academics suggested their departments should evaluate their existing syllabuses and improve them by making them more relevant where necessary.

### 3.2 Classroom discipline management

Chinese academics felt frustrated and perplexed by some of the behaviour of international students in class. These students were often late to class, left in the middle of the class for no reason, or listened to music, used smartphones, and chatted with others and made noise during class. The mood of the teaching staff and their attitudes towards international students was adversely affected by such behaviour, as such discipline problems would rarely occur in classes of Chinese students. Seven academics stated that although such behaviour might be due to cultural differences, the students should follow Chinese rules. The academics dedicated time to disciplining the students to make them aware of the seriousness of their studies. However, some emphasised that it was the responsibility of the student administrators to properly manage student discipline. One academic teaching hygiene explained how she managed class discipline and encouraged students to learn.

*In sharp contrast to Chinese students, foreign students pay too little attention to class discipline... For example, for morning class at 8 a.m., some students do not come until 9 a.m. I wondered why. Later, I went to Pakistan for a visit. When I went to a university, I understood that this was their habit. However, in China, if you want to obtain a Chinese degree, you have to follow Chinese rules ... I count the check-in time and lateness in the class participation score, and I call the roll five minutes in advance. Sometimes I close the classroom door for fear that they might sneak out. Sometimes I take a roll call in the second quarter of class to prevent anyone from sneaking out after signing in ... It is like fighting a battle of wits and of courage with them.* (P30)
3.3 Assessment methodologies

Six academics stated that the current assessment system was problematic, and they specifically mentioned the exam evaluation system and the final elimination system.

3.3.1 Exam evaluation system

Only a summative assessment based on final exam performance was conducted at the two focal universities, with no formative assessment. Some of the participants suggested that the university should add formative assessments such as a mid-term exams or in-class quizzes, because this could help academics follow students’ progress, identify any difficulties, push students to study harder, and reduce the pressure they felt regarding the final exam.

A teacher of pathophysiology suggested that any evaluation of international students’ academic performance should take into account their specific characteristics rather than strictly following the approach for Chinese students. This academic also felt that international students were more interested in practical learning in laboratory classes and generally outperformed Chinese students in these classes, so the university could consider increasing the weight of the practical score in their final course scores.

Some also mentioned they wanted to change the assessment methods, but in most cases, this was beyond their control, as the changes had to be approved at the organisational level after going through complicated application procedures. One participant who taught parasitology noted how their department had improved the assessment method based on students’ feedback.

Students came to complain that the exam was unfair because some students did not attend class, just memorised key points the week before the exam and got higher marks. After receiving their feedback, we improved this. We took their formative performance as a part of their assessment, and the final exam accounted for only 50%. Answering questions and signing into class are all part of the formative performance. I think we should add formative assessment and tell students to listen to the whole class. Our purpose is not to let them fail in the exam, but to guide them to learn something. Students understand this. Finally, almost all students passed my course. (P29)

3.3.2 Final elimination system

Seven academics pointed out that the universities’ assessment and evaluation systems were less strict for international students. This was perceived as a loose approach to entering and exiting the course, and did not put pressure on students to study. These academics suggested the university should implement a final elimination system to delay graduation or fail those who do not have the ability to graduate or attain an MBBS degree.

The university must strictly enforce the examination system and cannot deliberately make exceptions in international students’ favour. Schools should dare to weed out unqualified students, so that they will be afraid. Once they are afraid, most of them will study hard. (P10)

Theme 4: Teacher attributes and guidance

4.1 Addressing teacher attributes

Nearly half of the interviewees acknowledged that the attributes of academics, such as their dedication, passion for teaching, positive attitude towards teaching, sense of responsibility, and subject knowledge, play a pivotal role in ensuring teaching quality and thus enabling students to learn. They suggested that much more time and effort is needed to prepare lessons for international students, due to the modifications required. Some regarded the workload of preparing a lesson in English to be three to ten times greater than preparing a lesson for Chinese students. For instance, they had to write a lesson script beforehand to read aloud in class, because it was too challenging to improvise in English during the session. This type of language problem would not occur in Chinese classes.

The interviewees admitted that many academics were not motivated to teach international students because their universities prioritised research over teaching. Academics had no incentives to devote time and effort to areas that would not advance their careers. Therefore, although they were qualified to teach international students, they felt more motivated to conduct research. Apathy regarding teaching also affected its quality. A typical observation was as follows:
All materials for lesson preparation must be in English. It is already very difficult to prepare lessons in Chinese. I have to prepare lessons in English and practice my manuscript … In this current university environment, which generally attaches importance to scientific research rather than teaching, everyone is willing to focus on their own research rather than pay attention to teaching. Research awards are more tempting… When it comes to professional rank evaluation, papers are more useful than a teaching competition award. (P3)

Despite the common perceptions of a heavy workload and challenges and dissatisfaction due to the lack of incentives, some academics maintained a personal commitment to their teaching out of a sense of responsibility and self-improvement.

To maintain the enthusiasm of academics for teaching, it is not about monetary stimulation, but a sense of value and honour. Academics are not unsentimental people … Many academics are dissatisfied, but they continue to teach even if they are not satisfied. This is dedication, awareness, and sentiment … I don’t want to talk about interests, but the school should give me some other aspects that emotionally make me feel honoured to teach international students. (P4)

When asked about what incentives universities could provide to motivate academics, the interviewees said that university management should attach more importance to MBBS education and to the academics who provide it, instead of regarding the field as peripheral. They emphasised the need for continuous professional learning to improve pedagogies, and assistance with oral English through formal or informal learning opportunities at home or abroad. Several academics suggested that their teaching performance should be regarded by the university as part of its evaluation for promotion, rather than solely basing it on the number of publications. This would motivate academics to teach and make them more enthusiastic about teaching. A few academics also said they had sought funding so they could implement teaching innovations in the MBBS programme, but had been unsuccessful. Two academics felt that the university should count their class hours as double or three times more than for Chinese classes, because they spent much more time on lesson preparation and class hours were considered in terms of academic promotion.

4.2 Supervision and guidance by teachers

When asked what academics could do to help students improve their performance, nearly half of the interviewees indicated that there was a need for them to monitor their students’ progress more closely, and to push underperforming students harder, to make them aware they were responsible for their own learning. Some students were lazy and lacked self-discipline. The academics felt that if they could devote more time to guiding low-achieving students and talking with them after class to encourage them, students might feel that their teachers are concerned about them and become more motivated to study. An academic teaching cell biology highlighted the importance of encouragement and caring about students:

Students are still children. If academics communicate with them more, they will feel pressure and study under pressure … In the first year of my teaching, I dedicated all my energy to push them. I tried my best to memorise all of the students’ names and faces. They felt my care. Several students have kept in contact with me since graduation … I was busy with my own life and family, but if I had spent more time at that time, I could have saved a few more students from failing. (P21)

Six academics felt that it is important to impart not only knowledge and skills to students but also moral and ethical education, values, and a sense of responsibility. They stated that it is critical to teach students to cherish learning opportunities in China, to ensure they have the correct learning attitudes, and to acknowledge their role in medicine. This would stimulate students’ intrinsic motivation and instil in them a sense of respect and responsibility, as stated by an academic teaching anatomy:

In anatomy class, the specimens are donated by others. No matter which country in the world, the donors are those worthiest of respect. As a medical student, you should respect them and the patients, because they, ordinary people, have given us the opportunity to learn and explore medicine. You should treat patients well in the future. Why did they donate their bodies? Because they hoped you could become a good doctor. (P28)

4.3 Establishment of teacher–student rapport

One third of the interviewees mentioned that getting to know students and their cultures and establishing good teacher–student rapport are conducive to better communication and teaching. Good communication between academics and students can help build emotional connections and understanding in the classroom. For example, without knowledge of students’ lives and cultures, an academic might accidentally be culturally insensitive and cause discomfort. An academic
teaching orthopaedics with more than ten years’ experience of teaching international students shared how he successfully
developed a good relationship with students by incorporating aspects of their culture into his class.

> Once, as soon as I finished watching the Indian film Dangal, I quoted ten classic sentences in my slides to motivate
> my students in class. They became very interested when they saw these quotes. “Wow, this is our Indian movie.”
> Sometimes, I talk about my feelings about Nepalese festivals in class. They feel excited and think the teacher
> acknowledges their culture... If students like you, they will learn your course well. (P18)

An academic teaching anaesthesiology mentioned that those who taught clinical subjects generally knew less about their
students, and thus they failed to establish a good rapport. This made their lectures seem rigid and lacking attention to the
students as individuals. Those who taught clinical medicine suggested that universities should arrange activities to
increase communication between staff and students, which is particularly important for younger academics.

### Discussion

From the perspectives of academics who teach international students, this study revealed the critical factors that can affect
the academic success of international students in China. Four main themes emerged: the challenges associated with
pedagogy and content alignment, language barriers, resource management and the learning environment, and educator
attributes and guidance.

Pedagogy and language barriers were the factors most frequently reported to affect Chinese academics’ teaching
effectiveness and international medical students’ academic success. This supports the findings of the systematic review
by Dang et al. (2023), who identified these factors as the most common challenges facing Chinese academics in English-
medium-instruction (EMI) programmes. In addition, Helm and Guarda (2015) reported that in an Italian university, most
lecturers of programmes where English is the medium of instruction needed to improve their teaching competences,
which echoes our finding that pedagogy as the factor perceived most relevant to student academic success. The literature
also indicates that the pedagogical skills of academics are significantly influenced by language barriers (Ding, 2016;
Huang, 2019; Zhan, 2017). Yang et al. (2019b) found that EMI teachers in a Chinese university were more didactic
and less interactive in class than non-EMI teachers, which then hindered teaching and learning. However, improved
English does not necessarily equate to improved pedagogy (Dafouz, 2018; Dang et al., 2023; Helm & Guarda, 2015).
The findings of this study suggest that while it is important for universities to address the oral English abilities of
academics in terms of both specific disciplines and in daily life, improving their pedagogy is more important, as this
is key to the academic success of international medical students. Universities should offer ongoing professional learning
through teaching approaches such as PBL and CBL for pre-service and in-service academics, and they should fully
consider the needs, abilities, and interests of international medical students (Liu et al., 2021b; Saleh et al., 2012; Yang and
Lei, 2021). Universities should also strongly encourage and support teaching innovations with sufficient funding.

The problem of the detachment of teaching content from the licence exam requirements has been recognised in some
Chinese studies (Han & Guo, 2009; Huang, 2019). Some universities have been able to integrate licence exam content
into their teaching. For example, the MBBS curriculum at Zhejiang University has been internationalised with reference
to UK medical education standards and clinical executive standards such as Tomorrow’s Doctors (Fan et al., 2020), the
United States Medical Licensing Examination, and the Professional and Linguistic Assessment Board. Li and Cui (2010)
from Dalian Medical University suggested introducing licence exam tutoring by inviting foreign academics to teach
Chinese academics using exam questions and content, but this was viewed as separate from regular teaching. This implies
that university staff should not only adequately prepare students for assessments but also shape the curriculum to include
relevant topics (e.g. topics relevant to the FMGE).

This study revealed that limited access to teaching resources can damage the teaching and learning experience.
The lack of standard English textbooks and relevant teaching materials for international students has been noted in
many Chinese universities (Huang; 2019; Jiang et al., 2014; Yang et al. 2019a; Zeng & Sheng, 2019) and in other
countries, such as Ukraine, where EMI programmes are taught to domestic university students (Goodman, 2014). Subject
content is acknowledged to be mainly delivered through textbooks, so their selection and use will directly affect teaching
and students’ knowledge attainment (Li & Cui, 2010; Li et al. 2013). Compared with the rich integrated curriculum
teaching resources in developed countries such as in Europe and the US, China lacks English medical teaching materials
that have complete independent intellectual property rights and that align with the characteristics of its medical education
in terms of relevance and adaptability (Wang et al., 2018). The dire shortage of English teaching resources has limited the
sustainable development of medical education for international students in China (Wang et al., 2016). Although some
Chinese universities have begun to write their own textbooks and have made progress, problems remain. For example,
Chinese teachers’ levels of English ability are uneven, and their writing proficiency lacks unity (Wang et al., 2018).
In alignment with the literature (Ding, 2016; Hu 1990; Yang et al., 2019a; Zeng & Sheng, 2019), the findings of this study show that a lack of collaborative lesson planning for MBBS classes, a shortage of clinical teaching resources, and weak supervision mechanisms are common in Chinese universities. In terms of the perceived obsolete syllabuses, Zhou (2016) noted that Tianjin Medical University has added relevant teaching content according to changes of the disease spectrum in the country of origin. For instance, *Schistosoma aegypti* and *Schistosoma mansoni*, which are prevalent in Africa, were added to the Human Parasites course. The example of Tianjin Medical University implies that organisational support plays a critical role in guaranteeing the quality of MBBS education.

Classroom disciplinary issues are common with international students and can negatively influence the lecturing style of academics. This problem has also been identified in other studies (Jin et al., 2009; Zeng & Sheng, 2019). Some academics take disciplinary action, while others ignore the behaviour of problem students but feel uncomfortable with the lack of control. In a survey of learning experience in a medical university in Southwest China, half of the MBBS students felt that the academics were not strict enough in class (Yang & Lei, 2021), probably because of the language barrier. However, the findings of this study suggest that academics should ensure good disciplinary management to encourage good behaviour amongst students. Action needs to be taken with misbehaving students so they focus on attendance and listening during lectures.

The findings regarding the influence of assessment methodologies on international medical students’ academic achievement have rarely been discussed in the literature. In a study conducted in Ningxia Medical University, Zhang et al. (2020) focused on how the implementation of formative assessment in its MBBS microbiology course helped improve class attendance and learning attitude, develop creativity and self-directed learning habits, increase teacher–student communication, and made evaluation fairer and more objective. This demonstrates the advantages of revising assessment styles. Zhao et al. (2020) claimed that the current assessment of students in medical colleges and universities in China is generally summative (at the end of the course), and that there is a lack of understanding of and attention to formative (ongoing) assessment and evaluation during the course. Summative assessment was viewed by the interviewed academics as a relatively single and weak method that could reduce students’ enthusiasm for learning. Assessment only at the end of a course makes it difficult to monitor progress in students’ professional knowledge development (Zhan, 2017). Therefore, universities should appropriately adjust their assessment methodologies to encourage international medical students to learn and improve the learning processes and environment.

As in other studies (Wang, 2013; Zhang & Hu, 2019), we noted that there was often a tendency in Chinese universities to graduate international students by reducing the level of exam difficulty or lowering the pass mark, or by modifying the students’ marks to help them graduate. These approaches not only severely undermine student quality but also affect the international reputation and status of Chinese higher education. A system that deliberately holds back any student who is not mastering the knowledge and skills taught in the MBBS programme is required.

Blömeke et al. (2016) found that attributes of academics such as their experience, education background, motivations, professional knowledge, and self-efficacy predicted student achievement. Similarly, our findings suggest that academics’ characteristics, such as passion for teaching, professional responsibility, dedication, attitude, and content knowledge, can have an effect on teaching quality. As indicated by the interviewees, academics are often demotivated to teach international students because of a lack of emotional, material, and career incentives. A lack of incentives seems to be a prevalent phenomenon, as reported in other universities in different provinces in China, such as Liaoning Medical College (Ding, 2016), Three Gorges University (Zeng & Sheng, 2019), and Zhengzhou University (Zhang, 2016). The problem has also been identified in other countries such as Sweden (Stenfors-Hayes, 2010). This suggests that university policy makers need to be attentive to the opinions and needs of academics when developing an appropriate reward system that can promote teaching quality and thus student success.

The findings concerning teacher guidance for students and its effect on their success is new to the literature. Chinese academics appeared to subconsciously assume a parental role when disciplining international students, which implies their commitment to education. The importance of providing moral and ethical education for international students during and outside lectures has also been recognised in Chinese studies (Liu et al., 2021a; Wang & Huang, 2019). This may be particularly relevant in a Chinese context because of the influence of Confucian ideology on Chinese education, which suggests that academics should not only impart knowledge and skills but also have an obligation to cultivate the mind (Ye, 2001).

As previous studies set in China (Yang & Lei, 2021; Zhao, 2021) and Iraq (Saleh et al., 2012) have noted, this study revealed that teacher–student rapport is an overlooked dimension in MBBS teaching. Differences in language, cultural background, and religious beliefs can lead to a lack of such rapport, and make the dynamics within a classroom dull and
Building a good relationship between academics and their students may help to foster a more favourable classroom environment for learning. This will require academics to learn more about the life and learning characteristics of international students and to communicate with them more after class to establish a harmonious and supportive teacher–student relationship.

Conclusion and limitations
The findings of this study show that teaching-related factors have a major influence on international medical students’ academic success. The problems identified, and the findings of other studies, suggest that the same problems are prevalent across Chinese universities that host international medical students. It seems that although China’s MOE attaches great importance to the development of MBBS education quality, many challenges remain to implementing its policies at the university level. These issues may be related to the importance and support that each university attaches to the MBBS programme, and its own ability to teach the programme effectively. The findings highlight that university policy makers should devote more attention to the quality and development of MBBS education. Academics are responsible for implementing internationalisation in education and the developers of educational resources (Ding, 2016). Universities have the responsibility to support and meet the needs of academics in terms of professional learning and in the provision of incentives, and they should consider their recommendations for improving teaching quality. Effort should jointly be made at the individual, department, and university levels to ensure high teaching quality, which is the key factor in promoting student academic success.

Our study has several limitations. It was conducted at two sites, so caution should be taken when generalising the findings. They may be relevant to other Chinese universities offering courses to international students, but not in other contexts. Both research sites were located within a single province, and although representative of the general MBBS education in other universities in the same province, a broader geographical scope or the inclusion of more diverse medical universities from other regions or provinces might have led to new or different insights. Additionally, as the data were sourced from subjective opinions expressed by the academics, potential biases may exist. In future studies, this research could be extended to investigate the perceptions of academics on other student-related factors that may affect their academic success.

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Li W, Sun H: Migration intentions of Asian and African medical students educated in China: a cross-sectional study. Human Resources
Open Peer Review

Current Peer Review Status: ? ✔ ?

Version 2

Reviewer Report 07 May 2024

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Masego B. Kebaetse
University of Botswana, Gaborone, Botswana

Overall, the manuscript is clear and well-written. The gap within the specified context is clear. Here are some suggestions to improve the manuscript.

Introduction:
1] para 1, line 5 - kindly revise the sentence starting with "an example". For instance, something like this
"The Quality Control Standards of Basic Medical Education (in English Medium) for International Students in China document was released in 2020 by the International Medical Education Committee, the China Education Association for International Exchange, and the MOE's International Department with the goal of further standardizing MBBS education across Chinese universities and improving training quality."

2] It seems that para #2 could move to line 5 of para#1 just before the revision above.
The Ministry of Education has authorized 45 universities to recruit international medical students (Xie, 2021). The World Health Organization (WHO) recognizes these universities in its Directory of World Medical Schools, allowing international graduates with a Chinese MBBS degree to take license tests in their respective countries. These include the Medical Council of India Screening Test, the United States Medical Licensing Examination, and the UK Professional and Linguistic Assessment Board. According to Zhou (2016), studying MBBS in China offers numerous benefits, including shorter entrance standards, lower prices, and a safe and stable society.

Methods:
1] kindly include the study design before the ethics section
2] consider "we used purposive" vs. "we took" a purposive sampling
3] consider "semi-structured interviews were conducted between ..."
   - were all the interviews conducted in Chinese? Please indicate the languages used (I may have missed this).
   The data analysis needs clarity, not necessarily long.
4] Consider: "Data analysis was conducted using the Braun and Clarke (citation) framework to identify patterns in the data. Audio recordings were transcribed verbatim."
- what type of verbatim transcription did you use? Please indicate and provide a citation.
- what do you mean by coded manually?
- were the Chinese recordings transcribed and translated into English, or did you only translate what you needed for the manuscript?
- when you say, "Initial codes were generated based on identified keywords and phrases" what do you really mean?
If you say that you used Braun and Clarke, the description of the data analysis should be consistent with the important components of the framework.

**Results:**
1] It would have helped to see the naming of the participants include institutions A or B so readers can have a sense of the distribution of participants in the data extract
2] the authors tend to provide long summaries and then opt for long extracts at the end of the paragraph. Shorter data extracts can be included in the summary to ensure that the summaries are grounded in the data. The 22 data extracts come from only 22 of the 36 participants.

**Discussion:**
OK, though it seems to be missing the "so what."

**Is the work clearly and accurately presented and does it cite the current literature?**
Yes

**Is the study design appropriate and is the work technically sound?**
Yes

**Are sufficient details of methods and analysis provided to allow replication by others?**
Partly

**If applicable, is the statistical analysis and its interpretation appropriate?**
Not applicable

**Are all the source data underlying the results available to ensure full reproducibility?**
No

**Are the conclusions drawn adequately supported by the results?**
Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** academic success and learning challenges, first-year experience, elearning, curriculum development and support, faculty development.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.
Myla Arcinas

Department of Sociology and Behavioral Sciences, De La Salle University, Manila, Metro Manila, Philippines

The authors carefully considered the reviewers' suggestions in the revised version of the manuscript, which resulted in significant improvements to the study's depth and clarity. Particularly commendable is the enhanced elucidation of the process by which academics at Chinese medical universities are selected and assigned to teach international students. The clarification that international students are segregated from their Chinese counterparts in both classrooms and residential arrangements adds crucial context to the educational environment under investigation.

Furthermore, the authors have augmented the description of the research sites and provided comprehensive insights into the characteristics of the participants, including pertinent details such as gender, academic rank, and educational background. This enriched characterization enhances the readers' understanding of the study population and adds nuance to the analysis. Noteworthy revisions to the findings section, including the reorganization and refinement of thematic designations, demonstrate a commitment to clarity and precision. The expanded discussion on the alignment of teaching content with licensure exams reflects a deeper exploration of a key aspect of the study, thereby enhancing its relevance and applicability.

Moreover, the authors have adeptly expanded the discussion to encompass pertinent issues such as classroom discipline and the adaptation of teaching methodologies to accommodate diverse international student populations. This broadened scope not only enriches the discourse but also underscores the practical implications of the study findings.

The incorporation of additional literature references to support the newly introduced discussions further strengthens the scholarly foundation of the manuscript. Lastly, the thorough revision of the study's limitations demonstrates the authors' commitment to transparency and rigor in their research endeavors.

Overall, these revisions significantly enhance the scholarly contribution of the manuscript, positioning it as a valuable resource for academics and practitioners interested in the dynamics of teaching and learning in multicultural educational settings.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Are sufficient details of methods and analysis provided to allow replication by others?  
Yes

If applicable, is the statistical analysis and its interpretation appropriate?  
Yes

Are all the source data underlying the results available to ensure full reproducibility?  
Yes

Are the conclusions drawn adequately supported by the results?  
Yes

**Competing Interests:** No competing interests were disclosed.

**Reviewer Expertise:** e-learning, social research methods, impact studies, population, health and migration studies, youth and women studies, organizational development and human resource management

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

**Author Response 17 Feb 2024**

**Hugo Horta**

We just want to leave a note, further thanking the attention that the reviewer placed on reviewing the article (both concerning the original and revised version). We would also thank the reviewer for the very good comments provided which lead to the improvement of the quality of the article in several ways.

**Competing Interests:** No conflict of interest to report

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**Version 1**

Reviewer Report 04 September 2023

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© 2023 Arcinas M. This is an open access peer review report distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.
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The study’s objectives are clearly outlined and underscore the importance of investigating the academic success of international medical students within Chinese universities. The direct influence of this success on licensing exams and future job prospects adds solid motivation for the research. Moreover, the study aims to address a noted research gap regarding the awareness of teaching-related factors that impact students’ academic achievements, which is a relevant and worthwhile endeavor.

The chosen methodology, involving semi-structured interviews with 36 academics from two medical universities in China, is suitable for capturing the nuances of the research topic. The timeframe of November 2020 to January 2021 allows for comprehensive data collection over a reasonable period. The interviews’ audio recording, verbatim transcription, and subsequent thematic analysis highlight the rigor in data handling and analysis, ensuring transparency and accuracy in the findings.

The thematic analysis results provide valuable insights into teaching factors perceived by academics as influential for student success. The identified themes demonstrate a comprehensive exploration of the issue, encompassing elements such as teaching style, language support, resource management, academic attributes, mentoring, and assessment practices. This breadth enhances the credibility of the study’s findings and adds depth to its implications. However, it is essential to note that the themes generated can still be improved and clustered into three to create depth and quality in the discussion section.

Teaching Methodology/Pedagogy and Content Alignment
  - Encompassing challenges in teaching pedagogy
  - Alignment of teaching content with license exams

This cluster focuses on the interrelation between teaching methodology and content alignment with licensure exams. Both elements are integral to effective instruction and student preparation. Teaching pedagogy influences content, and aligning content with licensure exams ensures students are adequately prepared for assessments. The combined cluster highlights the synergy between pedagogical strategies and content relevance.

Educator Qualities/Attributes and Guidance
  - Addressing teacher attributes
  - Supervision and guidance by teachers
  - Establishment of teacher-student rapport

This cluster centers around the educators’ role in student development. Teacher attributes influence their ability to provide effective guidance, mentorship, and establish rapport with students. By grouping these themes, the study delves into how educators’ personal qualities impact their capacity to provide meaningful Supervision, guidance and build strong relationships with students.
Resource Management and Learning Environment
  ○ Management of teaching resources

  ○ Classroom discipline management

  ○ Assessment methodologies
This cluster revolves around the practical aspects of creating a conducive learning environment. Management of teaching resources, classroom discipline, and assessment methodologies collectively influence the overall learning experience. Efficient resource management contributes to effective instruction, while classroom discipline and assessment methods shape the learning atmosphere. Grouping these themes underlines the importance of maintaining an organized, supportive learning environment.

Given the current themes presentation, the conclusions drawn from the findings are pragmatic and actionable, emphasizing the need for continuous professional development and resource provision for academic staff. The recommendation for staff training aligns well with the identified teaching factors and offers practical guidance for institutions seeking to enhance teaching quality. The clarity of these conclusions contributes to the study's relevance and potential impact on teaching practices.

While the study's strengths are evident, a few aspects could be considered for improvement. A broader geographical scope or the inclusion of more diverse medical universities might have added insights into potential variations. Additionally, exploring potential research limitations or biases, such as the interviewees' backgrounds or the context of the two chosen universities, would have enhanced the study's transparency and thoroughness.

In summary, the study's objectives are well-established and significant within the academic context. The methodology is appropriate for the research aim, and the results' thematic analysis provides a comprehensive understanding of teaching factors affecting student success. The study's conclusions offer practical recommendations for improving teaching quality. While the study's strengths are evident, considering a broader scope and addressing potential limitations would further enhance its credibility and impact. It is important to note that clustering of the themes generated could definitely improve the discussion section and the overall quality of the paper.

Additional Points for Improvement of the Quality of the Paper:
1. In the Abstract, Methods section, it is crucial to explicitly mention the use of purposive sampling and state specific criteria employed in selecting informants.

2. In the paper, additionally, within the methods section, clarify the criteria used to identify the two medical universities covered in the study.

3. When describing the study's sources of data, avoid using "participants" unless it pertains to scenarios wherein focused group discussions or participant observation was used as method of data collection. In employing semi-structured interviews for data collection, the appropriate terminology is "informant."

4. Please exercise caution in providing qualitative interpretation derived from descriptive
statistics presented in the paper. For instance:

- Instead of "An overwhelming majority (86%)," employs the term "most" as it correctly corresponds to the range of 75% to 90% in relation to descriptive statistics.

- For the statement "Approximately 50% of interviewees," provide the actual frequency count and rephrase it to "Nearly half (mention the frequency count)."

- Similarly, for expressions like "nearly 50% of the interviewees," provide the precise frequency count, for instance, "Nearly half or majority (mention the frequency)."

- When discussing "Approximately 31% of the interviewees," explicitly mention the factual frequency count.

5. When commencing a sentence with a numerical value, spell out the number. For instance, instead of writing "45 universities are authorized by the MOE...," use "Forty-five universities are authorized by the MOE..."

6. The overall quality of the paper can be further improved through thorough proofreading and editing. For example, consider:

"Nine key themes emerged covering challenges: teaching pedagogy, English language, teaching resources management, teacher attributes, teacher supervision and guidance, teacher-student rapport, detachment of teaching content from license exams, class discipline management, and assessment styles."

It can be written this way -

Nine prominent themes surfaced, encompassing challenges spanning teaching pedagogy, English language proficiency, management of teaching resources, teacher attributes, Supervision and guidance by teachers, establishment of teacher-student rapport, alignment of teaching content with license exams, classroom discipline management and assessment methodologies.

7. Two themes can be combined into one theme - Theme: teacher attributes

Theme: Supervision and guidance by teachers

Combined Theme: Teacher attributes and Supervision, or Teacher attributes and Guidance

Combining these two themes into a single category of "Teacher Attributes and Supervision/Guidance" is justified by the intrinsic relationship between these aspects within the context of education. Teacher attributes inherently influence the quality of Supervision and guidance they provide students. Teachers' personal qualities, experience, and expertise significantly impact their effectiveness in guiding and mentoring students. By grouping these themes, the study can more comprehensively explore how specific teacher attributes contribute to the efficacy of their Supervision and guidance, leading to a deeper understanding of educators' role in student success.
Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Partly

If applicable, is the statistical analysis and its interpretation appropriate?
Partly

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: e-learning, social research methods, impact studies, population, health and migration studies, youth and women studies, organizational development and human resource management

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 01 Feb 2024

Hugo Horta

Responses to the comments from F1000 paper:

Reviewer #2

Comment: 1. The study's objectives are clearly outlined and underscore the importance of investigating the academic success of international medical students within Chinese universities. The direct influence of this success on licensing exams and future job prospects adds solid motivation for the research. Moreover, the study aims to address a noted research gap regarding the awareness of teaching-related factors that impact students' academic achievements, which is a relevant and worthwhile endeavor.

Response: Thank you very much for your encouraging acknowledgement of the significance of our study. We are delighted that the reviewer feels that our work provides a valuable contribution to the advancement of knowledge.
Comment: 2. The chosen methodology, involving semi-structured interviews with 36 academics from two medical universities in China, is suitable for capturing the nuances of the research topic. The timeframe of November 2020 to January 2021 allows for comprehensive data collection over a reasonable period. The interviews' audio recording, verbatim transcription, and subsequent thematic analysis highlight the rigor in data handling and analysis, ensuring transparency and accuracy in the findings.

Response: Many thanks for this positive assessment of our work and our methodological choices, as well as the collection and analysis of the data.

Comment: 3. The thematic analysis results provide valuable insights into teaching factors perceived by academics as influential for student success. The identified themes demonstrate a comprehensive exploration of the issue, encompassing elements such as teaching style, language support, resource management, academic attributes, mentoring, and assessment practices. This breadth enhances the credibility of the study's findings and adds depth to its implications. However, it is essential to note that the themes generated can still be improved and clustered into three to create depth and quality in the discussion section.

Response: We are extremely thankful again, this time for the positive remarks concerning the analysis. We have tried to re-write the analysis thematically into three themes as the reviewer suggested but ended up reverting some of the changes and decided to have four themes, which are independent even if somewhat overlapping with one another. This – in our opinion – makes the text to flow better and for the readers to have a clearer understanding of the different facets of the analysis. In this regard, we have structured better the sub-themes of the themes presented, many thanks!

Comment: 4. Teaching Methodology/Pedagogy and Content Alignment
   - Alignment of teaching content with license exams

This cluster focuses on the interrelation between teaching methodology and content alignment with licensure exams. Both elements are integral to effective instruction and student preparation. Teaching pedagogy influences content, and aligning content with licensure exams ensures students are adequately prepared for assessments. The combined cluster highlights the synergy between pedagogical strategies and content relevance.

5. Educator Qualities/Attributes and Guidance
   - Addressing teacher attributes
   - Supervision and guidance by teachers
   - Establishment of teacher-student rapport

This cluster centers around the educators' role in student development. Teacher attributes influence their ability to provide effective guidance, mentorship, and establish rapport with students. By grouping these themes, the study delves into how educators' personal qualities impact their capacity to provide meaningful guidance and build strong relationships with students.

6. Resource Management and Learning Environment
   - Management of teaching resources
   - Classroom discipline management
Assessment methodologies

This cluster revolves around the practical aspects of creating a conducive learning environment. Management of teaching resources, classroom discipline, and assessment methodologies collectively influence the overall learning experience. Efficient resource management contributes to effective instruction, while classroom discipline and assessment methods shape the learning atmosphere. Grouping these themes underlines the importance of maintaining an organized, supportive learning environment.

Given the current themes presentation, the conclusions drawn from the findings are pragmatic and actionable, emphasizing the need for continuous professional development and resource provision for academic staff. The recommendation for staff training aligns well with the identified teaching factors and offers practical guidance for institutions seeking to enhance teaching quality. The clarity of these conclusions contributes to the study's relevance and potential impact on teaching practices.

Response: Thank you very much for the reviewer's positive view on the relevance and content of themes 4, 5 and 6.

Comment: 7. While the study's strengths are evident, a few aspects could be considered for improvement. A broader geographical scope or the inclusion of more diverse medical universities might have added insights into potential variations. Additionally, exploring potential research limitations or biases, such as the interviewees' backgrounds or the context of the two chosen universities, would have enhanced the study's transparency and thoroughness.

Response: We agree that the inclusion of more diverse medical universities such as from different provinces in China would have enhanced the rigor in data and added insights into potential variations. This is one of the limitations of our study that we addressed in the paper. Practically it was a bit difficult to involve more universities especially from other provinces, but we aim to try to make this happen in our future studies. According to the comment of the other reviewer, we provided a table with the informants' demographic information and their backgrounds. Meanwhile, potential research limitations are now addressed in the Conclusion section.

Comment: 8. In summary, the study's objectives are well-established and significant within the academic context. The methodology is appropriate for the research aim, and the results' thematic analysis provides a comprehensive understanding of teaching factors affecting student success. The study's conclusions offer practical recommendations for improving teaching quality. While the study's strengths are evident, considering a broader scope and addressing potential limitations would further enhance its credibility and impact. It is important to note that clustering of the themes generated could definitely improve the discussion section and the overall quality of the paper.

Response: There are several limitations of the study. This study was conducted at two sites, but caution with generalization of the findings is needed. They may be relevant to other Chinese universities offering courses to international students, but not to other settings. Both research sites were located within one single province, although representative of the general MBBS education in other universities in the same province, a broader geographical scope or the inclusion of more diverse medical universities from other regions or provinces might have added insights into potential variations. Additionally, as the data was sourced from subjective opinions
of the academics, potential biases may exist. We have regrouped the themes according to your insightful suggestions in the discussion of the findings.

1. **Comment:** Additional Points for Improvement of the Quality of the Paper: 1. In the Abstract, Methods section, it is crucial to explicitly mention the use of purposive sampling and state specific criteria employed in selecting informants.
   
   **Response:** Thank you for this helpful comment. We have now added the use of purposive sampling and specific criteria employed in selecting our informants in the Abstract.

2. **Comment:** Additional Points for Improvement of the Quality of the Paper: 2. In the paper, additionally, within the methods section, clarify the criteria used to identify the two medical universities covered in the study.
   
   **Response:** Many thanks. The criteria used to identify the two medical universities have been clarified in the Methods section.

3. **Comment:** Additional Points for Improvement of the Quality of the Paper: 3. When describing the study's sources of data, avoid using "participants" unless it pertains to scenarios wherein focused group discussions or participant observation was used as method of data collection. In employing semi-structured interviews for data collection, the appropriate terminology is "informant."
   
   **Response:** Thank you for this important point. All the "participants" have been replaced with the terminology of "informants" now in the paper.

4. **Comment:** Additional Points for Improvement of the Quality of the Paper: 4. Please exercise caution in providing qualitative interpretation derived from descriptive statistics presented in the paper. For instance:
   
   - Instead of "An overwhelming majority (86%)," employs the term "most" as it correctly corresponds to the range of 75% to 90% in relation to descriptive statistics.
   - For the statement "Approximately 50% of interviewees," provide the actual frequency count and rephrase it to "Nearly half (mention the frequency count)."
   - Similarly, for expressions like "nearly 50% of the interviewees," provide the precise frequency count, for instance, "Nearly half or majority (mention the frequency)."
   - When discussing "Approximately 31% of the interviewees," explicitly mention the factual frequency count.
   
   **Response:** We appreciate this comment and decided to adopt it in the paper. Changes have been made in relevant places.

5. **Comment:** Additional Points for Improvement of the Quality of the Paper: 5. When commencing a sentence with a numerical value, spell out the number. For instance, instead of writing "45 universities are authorized by the MOE...," use "Forty-five universities are authorized by the MOE..."
   
   **Response:** Corrected. Thank you.
Comment: Additional Points for Improvement of the Quality of the Paper: 6. The overall quality of the paper can be further improved through thorough proofreading and editing. For example, consider: "Nine key themes emerged covering challenges: teaching pedagogy, English language, teaching resources management, teacher attributes, teacher supervision and guidance, teacher-student rapport, detachment of teaching content from license exams, class discipline management, and assessment styles."

It can be written this way - Nine prominent themes surfaced, encompassing challenges spanning teaching pedagogy, English language proficiency, management of teaching resources, teacher attributes, Supervision and guidance by teachers, establishment of teacher-student rapport, alignment of teaching content with license exams, classroom discipline management and assessment methodologies.

Response: Thank you very much for this point and for your good example of rewriting this paragraph. We agree that some proofreading and editing can improve the quality of the paper. Therefore, we have sent the paper for thorough proofreading and editing with an online academic proofreading service.

Comment: Additional Points for Improvement of the Quality of the Paper: 7. Two themes can be combined into one theme - Theme: teacher attributes Theme: Supervision and guidance by teachers Combined Theme: Teacher attributes and Supervision, or Teacher attributes and Guidance - Combining these two themes into a single category of "Teacher Attributes and Supervision/Guidance" is justified by the intrinsic relationship between these aspects within the context of education. Teacher attributes inherently influence the quality of Supervision and guidance they provide students. Teachers' personal qualities, experience, and expertise significantly impact their effectiveness in guiding and mentoring students. By grouping these themes, the study can more comprehensively explore how specific teacher attributes contribute to the efficacy of their Supervision and guidance, leading to a deeper understanding of educators' role in student success.

Response: There is now a teacher attributes and guidance theme, which includes the sub-themes "addressing teaching attributes", "supervision and guidance by teachers", and "establishment of teacher-student rapport". Many thanks for the fantastic suggestion.

Competing Interests: None

Reviewer Report 04 September 2023

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Muhammad Azeem Ashraf
Research Institute of Education Science, Hunan University, Changsha, Hunan, China

The article is focused on an important topic, and limited data is available on this topic, especially in English. The paper is written well and applies appropriate methods to collect and analyze the data. Authors may consider a few suggestions to improve the article.

1. Introduction provides good information about the context, quality, structure, and previous literature on medical education in China. The third paragraph is better merged with the other paragraph, as a one sentence paragraph looks strange. It would add more value to the section if some background information were provided on medical teachers training in other countries. The recent two decades have seen a massive flow of Chinese medical professionals to go abroad for higher studies. And these medical professionals with foreign qualifications take a central position in international medical education.

2. Methods: It is written well and provides sufficient information on methods applied in the research. A table on participants' background information is necessary. It will help readers get the participants' essential information while reading their reflections in the results section. Did any participants have foreign qualifications or working or learning experience in a foreign country?

3. It would be interesting if the comparison is provided between teachers who have had foreign learning/working experience and teachers who have never been to foreign learning/working. Did teachers reflect on the challenges of diverse classrooms (with students from different backgrounds/nationalities/religions) and students' English proficiency?

4. Practical and theoretical implications are better reported in the article, as the study is important to policy-making institutions to improve the teaching and learning of medical education in universities.

Is the work clearly and accurately presented and does it cite the current literature?
Yes

Is the study design appropriate and is the work technically sound?
Yes

Are sufficient details of methods and analysis provided to allow replication by others?
Partly

If applicable, is the statistical analysis and its interpretation appropriate?
Not applicable

Are all the source data underlying the results available to ensure full reproducibility?
Yes

Are the conclusions drawn adequately supported by the results?
Yes

Competing Interests: No competing interests were disclosed.
**Reviewer Expertise:** Medical education

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 01 Feb 2024

Hugo Horta

**Responses to the comments from F1000 paper:**

**Reviewer #1**

**Comment:** 1. Introduction provides good information about the context, quality, structure, and previous literature on medical education in China. The third paragraph is better merged with the other paragraph, as a one sentence paragraph looks strange. It would add more value to the section if some background information were provided on medical teachers training in other countries. The recent two decades have seen a massive flow of Chinese medical professionals to go abroad for higher studies. And these medical professionals with foreign qualifications take a central position in international medical education.

**Response:** We are extremely thankful for this comment. The location of the third paragraph was misplaced by mistake. Now it has been placed where it should be and the text flows much better. Many thanks.

We are highly appreciative of this insightful comment regarding the training of medical teachers. Recent and relevant literature on this topic has been added in a new paragraph in the Introduction to address this issue.

**Comment:** 2. Methods: It is written well and provides sufficient information on methods applied in the research. A table on participants' background information is necessary. It will help readers get the participants' essential information while reading their reflections in the results section. Did any participants have foreign qualifications or working or learning experience in a foreign country?

**Response:** Thanks for this good suggestion. We have added a table with the participants' demographic information. As the reviewer can observe from the table, most of the participants had education, working or training experience in a foreign country, predominantly in the USA.

**Comment:** 3. It would be interesting if the comparison is provided between teachers who have had foreign learning/working experience and teachers who have never been to foreign learning/working. Did teachers reflect on the challenges of diverse classrooms (with students from different backgrounds/nationalities/religions) and students' English proficiency?

**Response:** This is a very good suggestion. We carefully reviewed our data again and found out that there were no major differences between teachers who had overseas learning or working experience and those who had not on the challenges they faced. The teachers in our study seemed to face overall very similar challenges and barriers in terms of diverse classrooms and international students' English proficiency.
Comment: 4. Practical and theoretical implications are better reported in the article, as the study is important to policy-making institutions to improve the teaching and learning of medical education in universities.
Response: Thank you very much.
Competing Interests: No competing interests were disclosed.

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