Early introduction of clinical skills teaching in a medical curriculum – factors affecting students’ learning

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Objective To evaluate the effects of the early introduction of clinical skills teaching on students’ learning following an overhaul of the curriculum of a traditional Asian medical school.

Methods Randomly selected medical students in Year I and II were invited to participate in 30 focus group interviews while all students were asked to assist with the questionnaire survey. Most students were contacted personally to help them understand the objectives of the study. Confidentiality was emphasised and a non-faculty interviewer was recruited for the interviews.

Results Two hundred and eight of Year I/Year II students attended the lunchtime focus group interviews (response rate = 86.7%) while 252 (73.5%) students returned the questionnaire. The majority of them (87%) agreed or strongly agreed that it was good to introduce clinical skills in the early years of the curriculum. They reflected that the course enhanced their learning interest and made them feel like doctors. They also made many constructive suggestions on how the course could be improved during the interactive focus group interviews so that the negative effects could be minimised.

Conclusion It is useful to introduce clinical skills in the early years of a medical curriculum. A comprehensive course evaluation, using both quantitative and qualitative methods, helps to collect useful information on how the course can be improved.

Keywords Education, medical/*methods; *clinical competence; learning; curriculum; students, medical; questionnaires, Hong Kong.

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Introduction

Early exposure to clinical skills was one of the main themes discussed in the 1993 General Medical Council (GMC) publication Tomorrow’s Doctors.¹ There was evidence that the teaching of clinical procedures needed vast improvement.² Consequently, many medical schools in the UK and around the world have adopted the GMC’s recommendations and reported positive outcomes.³,⁴ This is in line with the general concept of introducing curriculum reform to medical school training in different places around the world, and has been proven to provide a positive impact on students’ perception of their medical school experience.⁵

The medical school at the University of Hong Kong has over 100 years of history. Dr Sun Yat Sen, the founder of modern China, was one of its first students. It had a curriculum based on the traditional British model with the first two years being basic science education and the subsequent three years being ‘clinical’. In September 1997 a new medical curriculum based on an integrated, system-based approach with a small group problem-based learning component was introduced. A Clinical Skills course was also included for junior medical students to allow them to acquire basic clinical skills. Most teachers use live demonstrations and audio-visual material (often videos and slides) to expound the contents. Students are then asked to practise the skills on their fellow students or on mannequins. This is a significant difference to the earlier course in which medical students would have little or no clinical contact until Third Year. Junior students, in the past, had often complained that they
Clinical skills teaching in a medical curriculum • T P Lam et al.

Key learning points

Early introduction of clinical skills teaching enhances junior medical students’ learning interest.

Junior students are concerned that their lack of a strong foundation in basic sciences may make it difficult for them to understand some of the clinical skills.

Both teachers and students should be well briefed when new courses are introduced.

Students develop significant anxiety when they do not have information on later years of a new medical course and they lack the experiences of senior peers to refer to during a curriculum reform.

Comprehensive course evaluation, using both quantitative and qualitative methods, helps to collect useful information on how a new course can be improved.

were taught more like science students and they felt they had little exposure to anything of apparent clinical relevance.

The aims of this study were therefore to investigate the effects on students’ learning process of the clinical skills component in their early years of medical training in a new medical curriculum of a traditional medical school.

Methods

Both qualitative (focus group) and quantitative (questionnaire survey) methods were used in this study. Efforts were made to encourage students to attend the focus groups and confidentiality was emphasised. A non-faculty member who had a strong interest in education and was experienced in conducting focus group interviews and qualitative research was recruited as a research assistant (RA) to help co-ordinate the project and to conduct the interviews. Details of the qualitative method are described elsewhere.9

Focus group interviews

Transcription and verification

The interviews were tape-recorded and transcribed verbatim by the research assistant, who also tried to record non-verbal responses from the students during the interview. The discussion was conducted mainly in the local dialect, Cantonese, with English terms appearing frequently. This is the most common language among young people in Hong Kong. The transcripts contained translated conversations while keeping in capitals the English words used during the interviews. The transcripts were then read and verified by the principal author.

Coding

The transcripts were analysed using the computer software QSR NUDIST (Version 4) (Non-mathematical Unstructured Data Information Searching Indexing and Theorising). A total of 10 of the interviews, one for each system block, were double-coded by the research assistant who conducted the interview, together with another research assistant also experienced in qualitative research. The principal author and the two research assistants compared the codings and analysed the consistency. The comparison led to further changes in the overall structure and arrangement of the nodes and re-definition of the nodes. The rest of the interviews were then coded according to the revised nodes. The objective of the analysis was to identify provisional inferences from the texts.

Questionnaire survey

All Year I and II students were asked to assist in this project by providing questionnaire evaluation on the Clinical Skills component at the end of the academic year. They reflected on the effectiveness of the course and whether its objectives were being achieved. The questionnaire used a four-point scale and was designed according to the main themes arising from the focus group interviews, for example, the usefulness of introducing clinical skills in early years, relationship with problem-based learning tutorials and factors affecting learning and teaching. Questionnaires were distributed in class, in the break between two lectures, and collected immediately afterwards. This helped to ensure a high return rate. The quantitative data were analysed using SPSS for Windows (Release 8:0).

Results

Response rate

The overall response rate for the focus groups was 86.7% with 208 students interviewed. One hundred and thirty-three questionnaires (76.0%) were returned from Year I students and 119 (70.8%) were returned...
from Year II students, giving an overall response rate of 73.5%. Ninety-two percent of the questionnaire respondents were aged between 19 and 21; 55.6% were males. Five (2%) of the respondents had completed a university undergraduate course before entering medical school, 1 in Hong Kong and 4 from overseas.

What are the effects on students' learning process of introducing the clinical skills component in their early years?

During the focus group interviews, students talked about the advantages and disadvantages of introducing clinical skills in the early years of their curriculum. The general views were that they greatly appreciated the introduction of the component, although they noted difficulties in its implementation. This concurs with the quantitative results in the questionnaire, in which 87.1% of respondents agreed or strongly agreed ‘it is good to introduce clinical skills in the early years of the curriculum’, but only 56.3% agreed or strongly agreed ‘the Clinical Skills sessions were well-conducted’.

I think the idea is good, but the method of implementation is not that good. (Others agreed) I think it is better than the old curriculum. I believe that most of us think that it is good to have the Clinical Skills sessions. It is only a problem with their methods, making us confused about what we should do. (Endocrine 1, text unit 193). (Student 5)

Students found it useful to study clinical skills in the early years. From the questionnaire results, 79.4% of respondents agreed or strongly agreed that they enjoyed the skills sessions, and 82.5% agreed or strongly agreed that they found the sessions useful.

The enhancement of learning interest was mentioned in almost all the interviews, and was regarded as one of the greatest advantages of the early introduction of this component. It also brought students more satisfaction in their studies, making them feel more like medical students:

If, in the first two years, we only learn things from books, we would have less interest in what we are learning. Now at least we can tell people, ‘I know how to measure blood pressure.’ At least we have the pride of a medical student. (Respiratory 2, text unit 178) (Student 3)

The value of such enhanced interest was appreciated even more when students compared themselves to their senior counterparts in the old curriculum:

Our seniors always say that they didn’t know what they were doing in the first two years. It was like studying Bio [biology] in secondary school. They said that, in the new curriculum, students are more like doctors. Otherwise, we would just lose interest if we just studied things like Biochem [biochemistry]. Now at least we can use a stethoscope. It is more interesting, and we are happier in our studies. (Cardiovascular 2, text unit 114) (Student 5)

The enhancement of learning interest was, perhaps, mostly due to the practical nature of the clinical skills component. Students found themselves exposed to practical knowledge that would be useful in their future studies and career. They felt that, had they only studied basic sciences, they might have found themselves too ‘bookish’:

If we tell others that we are studying Medic [medicine], but have never touched syringes or tried to measure blood pressure, I would think that I was just like a bookworm. I think the others would think that we lacked practical experience. They would think, ‘This group of students only know theories.’ (Foundation 2, text unit 230) (Student 6)

They also found it easier to remember what they had been taught in the practical skills sessions than in the lectures. The practical experience was further enriched when contact with the real clinical setting was possible:

The last clinical skills session [a visit to a geriatric hospital] was very good. (Student 1)

It was more impressive, because we saw the real thing. (Student 2)

We could see a stroke patient and the rehab [rehabilitation service]. It really helped even by simply talking to a stroke patient. (Foundation 3, text unit 210–213) (Student 8)

Another perceived practical advantage of the skills sessions was that students would get an early exposure to clinical skills. They regarded it as good preparation for their future studies, and felt that practising the skills early provided a good grounding for more advanced clinical skills training in later years.

At least it would not be like the situation in the old curriculum, in which students learned many different skills at one time in the third year. Even though we are not learning all the detailed steps now, we can have a rough idea. It is better preparation for the future when we go to the ward. (Respiratory 3, text unit 61) (Student 8)
Learning clinical skills in the early years also lessened pressure on the students in their clinical years. Very often, they heard about less positive experiences from their senior colleagues:

If we start to learn it in the third year, time will be very tight. In that case, we will only be able to receive information passively. We will not have time to think it over. I had an experience. I talked to a senior and asked him how to insert a drip. He told me the basic procedure. Then I asked him some more questions, like why it is in such a direction, or whether the blood will flow back in that way. He couldn’t answer me. He said, ‘How come I haven’t thought of these questions before?’ Maybe it is because he is going to learn it later, and he is too busy already. Thus he can only receive the information passively. As we are learning the skills now, we will think about why it is done in such a way; why insert a drip in this way, or why perform examinations in this way. We still have time to think of these questions and digest the information. (Urogenital 1, text unit 149) (Student 6)

Many students found the clinical skills component useful because it helped in the lectures and PBL tutorials. It helped them to visualise what they were being told in words, and to understand the clinical meaning of medical terms:

Also, in our PBL cases, some terms in clinical skills would be mentioned. For example, in the last one, it mentioned the speculum. After we had done the examination, we understood what it was. If we hadn’t done it, even if they explained it to us; we could not imagine what it was like. (Urogenital 1, text unit 151) (Student 5)

The component also enhanced students’ interest in courses other than the PBL tutorials, such as anatomy:

For example, heart diseases. We would listen at the different positions. That would help in anatomy. We would have better understanding and memory about where the positions were. We had hands-on experience of listening to the positions with the stethoscope. This left a greater impression on us. (Cardiovascular 2, text unit 240) (Student 5)

Some students suggested that the Clinical Skills course helped them improve their communication skills and provided a broader training perspective:

I think, sometimes, that we not only learned skills, such as abdominal examination, but also some general manners via the clinical skills. I think practically we will not be able to use the skills in the first two years. However, at least we can feel how, when we meet a patient in the future, we should approach him. What will be the first thing we say to him? There are some underlying skills. I think after two years’ exposure, this will be of some help. (Endocrine 2, text unit 145) (Student 7)

Another view was that the Clinical Skills component was a vital part of the new curriculum:

I think it fits into the curriculum. In the past, they didn’t have PBL. Now we have pbl cases. If we didn’t have practical clinical skills… we would still come across the terms in the cases. It helps to deepen our understanding of the case. (Endocrine 3, text unit 170) (Student 2)

Challenges

Although students found a lot of good reasons for having clinical skills in their curriculum, many of them also expressed views on the potential drawbacks of early introduction.

Despite the fact that students generally enjoyed learning clinical skills, they were very concerned when they found themselves unable to understand them. They attributed this to the lack of a strong foundation in basic sciences:

I think we have not had enough knowledge to understand the purpose of a chest exam [examination] yet. Nor could we understand what a chest exam (examination) could help us to find out. (Student 1)

So you think the fundamental problem was that, as year one students, you didn’t have enough knowledge…(Interviewer)

We were not at a suitable level to understand what a chest exam (examination) was for. (Student 1)

Do you mean they should not teach it in year one? (Interviewer)

I think they can teach it, but only as an introduction. Yet, it is a bit harsh if they are going to assess us in the examinations. We have not understood it yet. (Respiratory 2, text unit 62–66) (Student 1)

Some students found that having one more subject in their curriculum implied more work:
In the new curriculum, do they want to reduce our workload and make our studies more practical? Or … did they expect us to look up a lot of information? Do they want to add to our workload? I am very confused. When I come across something I am not sure of, and I know that it will be in the next block, do I need to study it now? I have no idea. (Cardiovascular 3, text unit 15) (Student 4)

However, the greatest pressure came not from the increased workload, but the objective structured clinical examinations (OSCE):

I think that at this stage, we should learn the skills but not be assessed on them. (Student 3)

I was just thinking the same thing! (Student 4)

I think, even if they didn’t assess us, we would still be interested in learning them because they are really interesting. We wouldn’t abandon them even if they were not assessed. This is because learning the skills helps us understand what is written in the books. For example, we would be able to tell where the pulse is. However, it is quite difficult in terms of [OSCE] examinations. (Student 5)

They create unnecessary pressure. (Others laughed) (Student 6)

Do they? (Interviewer)

Because we had to spend extra time practising the skills. (Respiratory 1, text unit 117–122) (Student 2)

Some students considered themselves disadvantaged by clinical skills training in their pre-clinical years because they didn’t have many opportunities to deal with real patients. Most of the time, they were practising the skills on their own classmates or on mannequins. Although many of them understood the reasoning behind this, they still had a strong desire to ‘see the real thing’.

Why should we wait until the third year to go to the ward? Now that we have learned how to inspect the JVP, the blood vessels, and learned how to measure blood pressure, we can have the chance to go to the hospital to see patients. The doctors can guide us. We only need to have a peep. We won’t be examining the patients as the fourth and fifth year students. We only need to gather around the bed to have a look. That will already be better than learning theories without seeing the abnormal. It seems useless. (Student 5)

For example, there are a lot of heart patients in Grantham Hospital. They can let us visit them. We can gather around the bed to see the patient. We will be able to see the JVP then. (Student 3)

They have taught us about it anyway. Why not let us see it in the hospital? It will not make any big difference. (Student 5)

If they don’t want to affect the patients, maybe they can make it into videotapes or computer simulations. In that case, we will not bother the patients. Of course it would be best to try the skills on real patients. (Cardiovascular 2, text unit 145–148) (Student 1)

Learning clinical skills in a setting without patients also often made them feel that the sessions were not serious enough. They felt that this was reflected in both the attitude of the students and the teachers:

I think the tutor should know that he had to allow enough time for each person to practise at least once. Otherwise, those who have not had an opportunity will have learned nothing. Maybe it’s an attitude problem. They may think that it is not serious, because we are not dealing with real patients. (Gastrointestinal 3, text unit 39) (Student 8)

Students also found that they did not have sufficient practice during the skills sessions:

However, if the other things do not match well with it [the clinical skills component], we will soon forget about what we have learned, because we don’t have the chance to practise them. That will be a waste of time then. We will only have a concept. We have spent a lot of time on it, but… (Student 3)

That means you think that more practice is required… (Interviewer)

To go with what they have taught. It will then be more beneficial to us. (MOD 3, text unit 162–164) (Student 3)

One perceived problem arising from early introduction of clinical skills teaching was the teachers’ expectations. Some students felt that the teachers were used to teaching students in the clinical years, and failed to appreciate the position of students in the earlier years of training:
The professors teaching us clinical skills were not the professors who taught us basic sciences. When professors are used to teaching clinical skills, they may have the same expectations from us as from the third or fourth year students in the old curriculum. I think this message has not been emphasised clearly enough to the tutors. (Cardiovascular 3, text unit 53) (Student 6)

Some students also felt that a few of their tutors were unenthusiastic about teaching students in the junior years:

... a doctor thought that it was a waste of time teaching clinical skills to first and second year students. He thought that the students would never be able to remember them. His group could not learn much, because the tutor thought that this was not an appropriate time to teach them these skills. He didn’t put much effort into it. Thus the students were not able to learn much. (Gastrointestinal 2, text unit 85) (Student 2)

Being the first students of the new curriculum, they felt disadvantaged in many aspects. They had an impression that the Faculty was unprepared for the course, and that tutors were not conversant with it.

Maybe [it was because] the new curriculum has only been recently launched. They do not have many long-term plans yet. I think they are only dealing with the short-term problems. I don’t know the reason. This situation has made us even more worried. It is already very disturbing that the short-term objectives are so unclear. If they don’t even have the ability to set them, it is not clear what will be next and we are concerned about the future. (Cardiovascular 3, text unit 153) (Student 6)

Many of the issues raised by the students were related to what they felt were, ill-defined learning objectives of the course. Students were confused about whether they were expected to acquire the skills thoroughly at this stage, or only to gain some exposure.

One result of the disadvantages described above was that there was a strong feeling that the skills should be taught again in the future:

I have heard a rumour. In the old curriculum, there was an introductory clerkship in the first month of year three. I heard that the clinical skills sessions in the new curriculum are replacing this introductory clerkship. I think we need to ask Doctor X, or the doctors in charge of this project, to explain this clearly to us. We are quite worried about it. I heard that we would not have the introductory clerkship in year three, under the new clinical curriculum. We are not very sure about that. (Student 7)

Let me try to make it clear. You want to know whether your current clinical skills sessions are... (Interviewer)

...equivalent to the introductory clerkship in the old curriculum. Also, we want to know if the skills will be taught again in the future. Because it was quite... (Student 7)

The reason I asked... (Student 8)

Pardon me. You think that there is a need to learn them again, right? (Interviewer)

Yes. Absolutely. We didn’t have patients for us to examine. It was not real clinical skills. (Student 7)

I can be sure that no one will remember all he learned from last year. That means the clinical skills in year one. No one will be sure if he can perform all the skills correctly. (Endocrine 2, text unit 123–132) (Student 8)

Statistical analysis of the questionnaire data was carried out to look for possible correlation between variables and attributes but this only revealed that Year II respondents were more likely to agree that the clinical skills sessions were useful than Year I respondents ($P < 0.05$, by chi-square test).

Discussion

It was very clear that students enjoyed the Clinical Skills sessions a great deal and they were very receptive to this medium of instruction that they felt was an interesting change from traditional classroom teaching. These sessions were therefore good at stimulating learning interest in the new curriculum. Students could get an impression of what it is like to be a doctor, and feel better prepared for their clinical studies in later years. Therefore, a large number of them thought it was useful to introduce clinical skills in the early years of their curriculum. These findings are consistent with earlier reports.3,4

They felt, however, that they were not adequately briefed on why they were having the sessions. Perhaps when faced with a new component in a new curriculum, they had difficulty assimilating the skills into their
overall learning. Despite the course organisers taking great care to provide clear learning objectives and supplementary reading material, some still felt confused about how much depth in which they were expected to learn the skills. Hong Kong secondary school students are used to a rigid didactic teaching structure and it is likely that this reflects unfamiliarity and anxiety with this teaching medium. This may be compounded by the feeling of being the experimental subjects in a new curriculum with no peer advice. Was it to get the students exposed to some clinical skills? Was it to allow them to relate the skills to basic sciences? Or were they expected to acquire the skills to a competent level (with little opportunity for practice)? Even with the best efforts and preparation from teachers, students will naturally seek peer advice and reassurance concerning such issues and it is simply not possible to provide this at this stage of a new curriculum. It seems inevitable therefore that such concerns will dissipate in subsequent years.

Students’ comments concerning the OSCE are, likewise, understandable. They often dislike and become preoccupied with examinations, as this is the traditional method of assessment they have been used to through primary and secondary school, and, again have no reassurance from experience or peer guidance. Despite this, their overall performance in the OSCE was excellent, which should restore confidence in subsequent students that such fears are unfounded.

The Medical Faculty had used many techniques to help these students such as short feedback loops for appraisal of teaching issues, as well as those mentioned previously, and it is hard to determine what more could be done to alleviate the concerns we uncovered. Perhaps this is an inevitable ‘teething’ phase of new curriculum development. Fortunately it is apparent that the vast majority still perform very well in these circumstances and is likely to reflect the effectiveness of an active approach to learning basic clinical skills.1

It is important to recognise that teachers’ performance and attitudes also directly affect students’ perception of the course. When the teachers appeared to lack understanding and enthusiasm themselves, this created a bad impression. This form of teaching is very ‘labour intensive’ and many teachers need to be recruited to assist in its execution. Staff as well as students are utilising pedagogical techniques that are very different from the old curriculum. Inevitably there will be varying standards of skill and enthusiasm.10 Frequent student and peer teacher evaluation has been very useful to us in this regard, allowing advice, replacement and retraining where appropriate.

We feel that these are very important considerations for other medical schools that are contemplating curriculum review.

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Contributors

TPL was responsible for the conception of the research idea, design of the project, application for funding, meetings with students, drafting of the focus group interview questions and questionnaire design, analysis of data, and drafting of the manuscript. MI was responsible for discussing the initial idea with TPL, design of the project, drafting of the focus group interview questions and questionnaire design, and drafting of the manuscript. LWCC’s contribution included discussing the initial idea with TPL, design of the project, drafting of the focus group interview questions and questionnaire design, and drafting of the manuscript. The contribution by PC included meeting with students, drafting of the focus group interview questions and questionnaire design, conduct of focus group interviews, analysis of data, and drafting of the manuscript.

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