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- Objective** To survey medical graduates from the University of Hong Kong on how well they perceived their learning needs had been fulfilled by the old (before 1997) and the new (after 1997) curricula.
- Design** Retrospective questionnaire survey.
- Setting** The University of Hong Kong, Hong Kong.
- Participants** Medical graduates from the University of Hong Kong who graduated between 1997 and 2006 were invited to complete a questionnaire online or in paper form; 1997-2001 graduates were trained under the old curriculum, and 2002-2006 graduates under the new curriculum.
- Results** The response rate was 23%. The survey showed that the graduates of both curricula felt that research skills, population health, and ophthalmology were not emphasised enough in the medical programme. In addition, some graduates of the old curriculum mentioned interpersonal skills, ethics and professionalism, and language skills, which were pinpointed in the curriculum reform in 1997. Some graduates of the new curriculum mentioned anatomy, microbiology, and diagnostic radiology. Graduates of both the old and the new curricula perceived the same top five areas as being lacking in their respective curricula, in relationship to their clinical career and personal growth, namely: business administration, law, professional English, life coaching, and humanities. A small percentage of graduates also took courses in these areas after graduation.
- Conclusions** The survey showed that the curriculum reform in 1997 at the University of Hong Kong had correctly pinpointed some of the learning needs. The survey also identified educational needs in the existing curriculum that need to be dealt with in the forthcoming curriculum reform in 2012.

Key words

Curriculum; Education, medical, undergraduate; Teaching/methods

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Introduction

In 1997, the undergraduate medical curriculum of the University of Hong Kong (HKU) underwent a major reform.¹ The curriculum, which had previously been a traditional discipline-based one, was changed to one that was problem-based and system-based.² Problem-based learning aims to prepare students for lifelong learning by developing their ability to search for and assimilate new knowledge.³⁻⁵ A system-based approach integrates the medical curriculum around major body systems, so that studies are no longer centred around traditional disciplines such as anatomy and physiology.

After this radical change in the curriculum, have the learning needs of the students been better fulfilled, and are there still other learning needs that are not being addressed? While the so-called new curriculum has been in place for over 12 years, the health care environment was also undergoing rapid changes. The signing of the Mainland and Hong Kong CEPA (Closer Economic Partnership Arrangement) means a closer integration between the Hong Kong health care system and that of Mainland China. The Hong Kong Special Administrative Region (HKSAR) Government is also promoting the development of the health care industry. Because of these various changes and new challenges that our medical graduates have to face, we wished to ask what new learning needs could have arisen.

Finding out the learning needs of the medical graduates is especially important now that yet another curriculum reform is imminent. The Government of the HKSAR has

approved a major reform of the educational system in Hong Kong (the so-called 3-3-4 reform), in which the duration of undergraduate university curricula will be extended from 3 to 4 years from 2012. The medical curriculum at HKU will therefore be extended from 5 to 6 years.

In a curriculum reform many factors need to be considered,⁶⁻⁹ but the feedback from the graduates who have put what they learnt in the university into use in the real world deserves to be an important guide for the coming curriculum reform.¹⁰⁻¹² We therefore conducted a survey on alumni of the medical programme at HKU who graduated over a 10-year period, to determine how they perceived their medical undergraduate education, after putting what they learned to use in their clinical careers.

Methods

With the approval from the Institutional Review Board of HKU Medical Faculty/Hospital Authority Hong Kong West Cluster, HKU medical graduates who graduated between 1997 and 2006 were invited to take part in a survey. The doctors who graduated between 1997 and 2001 (entered medical school between 1992 and 1996) had studied under the old curriculum. Those who graduated between 2002 and 2006 (entered medical school between 1997 and 2001) had studied under the new curriculum. Graduates who took more than 5 years to complete the curriculum were not included in this survey.

Potential participants (except for the 2003 graduates) were first sent an email message that explained the aims of the survey and that their responses would remain confidential, and they were invited to complete an anonymous online questionnaire. Two weeks later, a survey package was sent by regular mail, which contained a covering letter, and the same questionnaire in paper form, together with an addressed postage-paid return envelope. At that time, they were also offered the option of completing the questionnaire online. Each graduate's unique university number was used solely for tracking returned questionnaires (online and paper) to prevent counting duplicate returns and returns from non-graduates, and was never linked to the identity of the graduate. Three reminders were sent in the subsequent month. The 2003 graduates were surveyed using the same questionnaire but the logistics were slightly different, since they were targeted in a university-wide survey. They were first sent an email message inviting them to complete an anonymous online questionnaire that was exactly the same as the one for graduates from the other 9 years. After a month, the non-respondents were then contacted by phone and email. They were given the choice of completing the questionnaire over the phone or via the Internet.

香港一醫學課程的畢業生對課程的學習需求

目的 調查香港大學的醫科畢業生於新（1997年後）和舊（1997年前）醫學課程的學習需求。

設計 回顧性問卷調查。

安排 香港大學，香港。

參與者 研究對象包括兩個組別的香港大學醫科畢業生：第一組別於1997至2001年間畢業，受訓於舊課程；第二組別於2002至2006年間畢業，受訓於新課程。調查問卷以網上或郵寄方式進行。

結果 問卷回覆率為23%。調查發現，在新或舊課程受訓下的畢業生都一致認為，其所就讀的醫學課程對研究技巧、人口健康和眼科的教授仍有不足。此外，在舊課程受訓下的畢業生亦提出，舊課程欠缺人際溝通技巧、倫理與專業精神和語言能力的訓練；而這幾方面在新課程已有所加強。至於在新課程下受訓的畢業生，他們認為新課程在解剖學、微生物學和放射診斷學的學習和訓練上仍需加強。調查又發現，兩組別的畢業生都希望在課程內，加入與個人成長和發展將來醫療事業的有關課題，如工商管理、法律、職業英語，個人目標導向發展和人文科學。個別畢業生更表示，他們於畢業後曾修讀相關課程。

結論 調查結果顯示，香港大學的醫學課程在1997年的改革，回應了舊課程的不足之處。調查結果亦反映出現有課程的一些學習需求，可在2012年的課程改革時加以強化。

The complete questionnaire was developed for all faculties of the HKU by the Working Group on Graduate and Employer Surveys in collaboration with the Centre for the Enhancement of Teaching and Learning. Part of the questionnaire was designed to gather feedback on the graduate's general university experience during their full-time study at HKU. The current study only focused on the specific learning needs of graduates in the medical curriculum (Appendix).

Results and discussion

The response rate was 14% for the 2003 graduates and 24% for the remaining graduates; the average response rate for all 10 years of graduates was 23% (356/1581). In other major graduate surveys, the participation rates have varied between 15 and 50%.¹³

Concerning the areas that the graduates considered as not being emphasised enough, three areas were mentioned for both the old and the new curricula, respectively: research skills (37% and 36%), population health (21% and 20%), and ophthalmology (21% and 14%) [Figs 1 and 2]. Although the new curriculum emphasised problem-based learning, and training the students to search for new information to answer problems at hand, a large portion of its

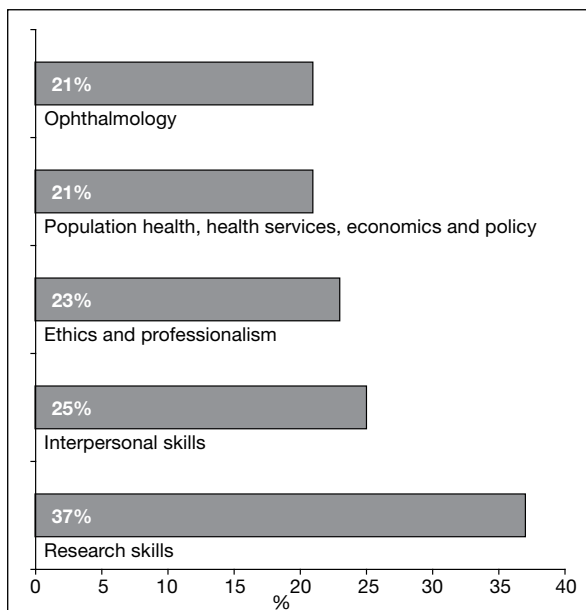


FIG 1. Top five areas that graduates of the old curriculum considered as not being emphasised enough in the curriculum

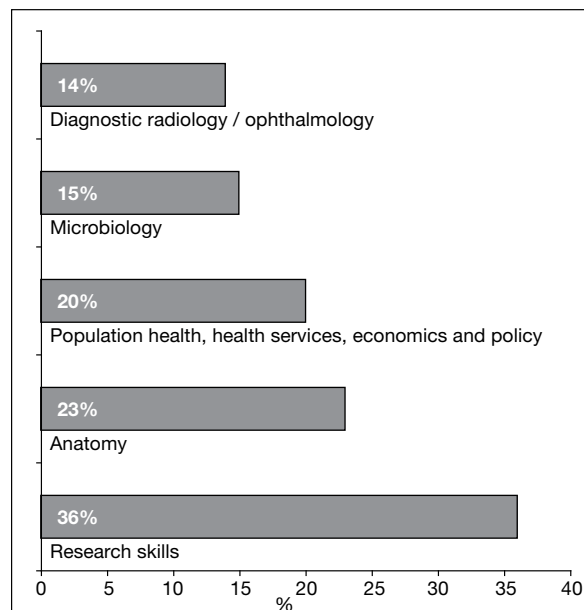


FIG 2. Top five areas that graduates of the new curriculum considered as not being emphasised enough in the curriculum

graduates still felt that there was a need for training in other research skills. Population health might have been mentioned by graduates from both the old and new curricula, because of recent population health issues such as severe acute respiratory syndrome and bird flu. As for ophthalmology, it has in fact been introduced into the new curriculum, which may explain the smaller portion of graduates from the latter who considered it to be underemphasised.

Some graduates of the old curriculum also

mentioned interpersonal skills (25%) and ethics and professionalism (23%), as areas that were not emphasised enough in their old curriculum (Fig 1). These areas were closely followed by language skills (20%). Their feedback echoes the findings that junior doctors are not well prepared in communication skills and medical ethics.^{14,15} However, these areas have been particularly emphasised in the 1997 reform. The courses “Clinical Interpersonal Skill” and “Medical Ethics and Law” are now integral parts of the new medical curriculum. Language skills are also an area targeted by the new curriculum. There are currently two English courses in the medical curriculum. One prepares students for problem-based learning and the other for bedside learning. Therefore, these areas that some graduates of the old curriculum perceived as underemphasised were no longer identified by new curriculum graduates (as reflected in Fig 2), indicating that the reforms in 1997 had correctly addressed many of the learning needs of the students at that time.

On the other hand, graduates of the new curriculum identified other areas as underemphasised, including anatomy, microbiology, and diagnostic radiology (Fig 2). In the new curriculum, anatomy and microbiology are no longer taught as separate disciplines, but are integrated into the different blocks and clerkships. The teaching and learning time dedicated to these two disciplines is less than that before the curriculum reform. For anatomy, the results may also be related to the removal of dissection in the first few years of the new curriculum, and the perceived need for dissection in the learning of anatomy.¹⁶⁻¹⁸

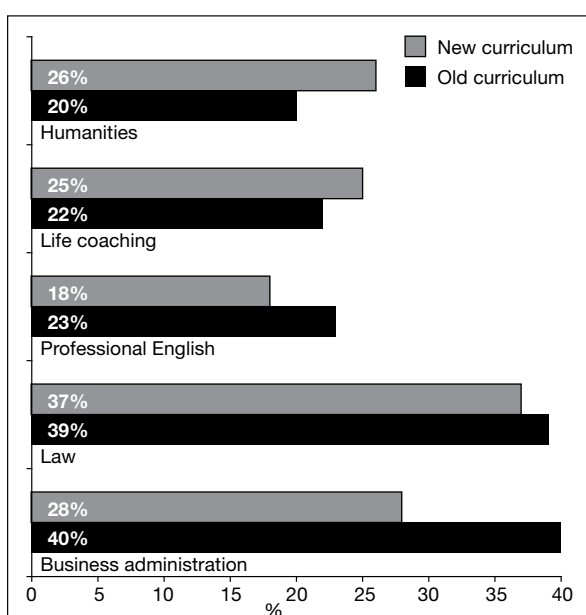


FIG 3. Top five areas that the graduates wish they had studied in the old and the new medical curricula

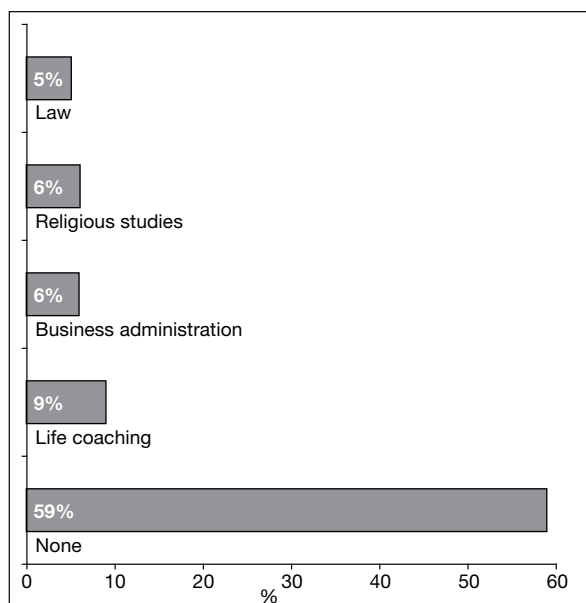


FIG 4. Top five categories of courses that the graduates of the old curriculum have taken since graduation and are not directly related to the specialty the graduate is working in

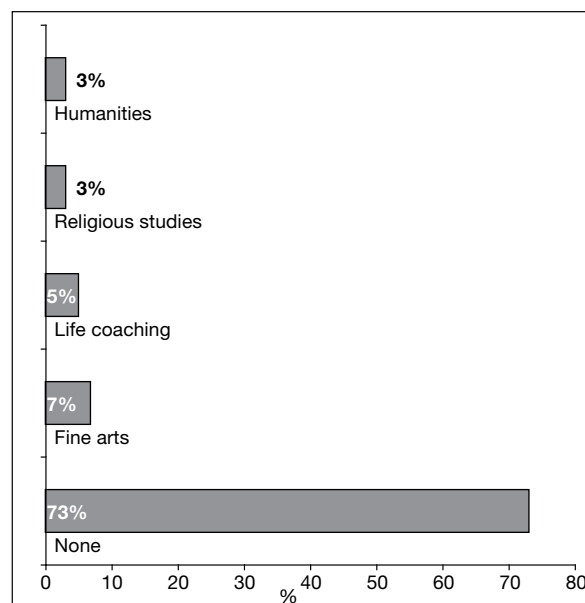


FIG 5. Top five categories of courses that the graduates of the new curriculum have taken since graduation and are not directly related to the specialty the graduate is working in

Concerning the second question, on the areas of learning that graduates perceived as lacking in the curricula, graduates of both the old and new curricula respectively reported the same top five areas, though with different priorities, namely: business administration (40% and 28%), law (39% and 37%), professional English (23% and 18%), life coaching (22% and 25%), and humanities (20% and 26%) [Fig 3]. Three of these areas (ie business administration, law, and professional English) are related to the pragmatic aspects of a clinical career, while the other two are related to personal growth.

When asked whether they had taken courses in areas that were not directly related to the clinical specialty they were working in, graduates from the old and new curricula gave different responses (Figs 4 and 5). Most graduates from both curricula had not taken such courses; 73% from the new versus 59% from the old had not taken such courses. This was probably related to graduates of the new curriculum being in training at the time of the survey and therefore having little time for courses not directly related to their training. Many of these courses taken by the graduates of both curricula were in areas that they indicated as being deficient in their undergraduate studies, such as life coaching, business administration, law, and humanities. The internal consistency of the results indicated that the deficiencies perceived by medical graduates are genuine and motivated them to educate themselves in such areas.

The coming curriculum reform in 2012 can at least strengthen some of the deficient areas

perceived by the graduates of the old and new curricula. The Common Core Curriculum (CCC) will be implemented for all undergraduate programmes at the HKU, including the medical programme.¹⁹ Its main aim is to broaden student horizons beyond the chosen field of study. Medical students will no longer focus only on medicine, but will have opportunities to study areas such as "Scientific and Technological Literacy", "Humanities", "Global Issues" and "China: Culture, State and Society." The CCC will enable students to develop their awareness of the complexity and interconnectedness of everyday life issues, and cultivate their appreciation of their own and other cultures. It is expected to help them play an active role as responsible individuals and citizens of local and global communities, and develop intellectual skills to further enhance their chosen field of study. Moreover, the medical humanities will be further promoted as part of the new medical curriculum.²⁰ These new educational initiatives are expected to address some of the learning needs voiced by the graduates who participated in the current survey.

Since the medical programme at the HKU is an undergraduate entry programme, the 5 (or 6, after 2012) years of undergraduate study represent the only tertiary level education for most of these graduates. Apart from training to achieve professional competency in medicine, a significant portion of their undergraduate education is focused on other aspects of their personal development. By this means they may become even more productive and responsible members of not just the Hong Kong community, but any community they eventually

serve. No matter whether they studied under the old or the new curricula, the medical graduates we surveyed perceived the same need for personal development that needed to be addressed as part of their education. The coming curriculum reform in 2012 should therefore serve a critical role in fulfilling learning needs, so as to prepare our graduates for later life and careers.

It should be recognised, however, that not all the learning needs of medical students need to be met in the limited undergraduate period. Postgraduate training is also an important part of medical education, although it too is undergoing rapid reform.²¹

Medical education truly requires a lifelong commitment to learning. As the Red Queen in Lewis Carroll's *Through the Looking Glass* said, "It takes all the running you can do to keep in place."²² Ideally, the undergraduate medical education we provide should be suitable and adequate to prepare our graduates to cope with the rapid changes in medical knowledge and the health care environment.²³ Hopefully, it should also equip them with the cognitive skills, interpersonal sensibilities, and cultural sophistication to function as productive, goal-driven, and responsible members of this increasingly complex and interconnected world.²⁴

Conclusions

Our survey showed that the graduates of both the old and new curricula felt that research skills, population health, and ophthalmology were

not sufficiently emphasised in their respective curricula. Some graduates of the old curriculum also mentioned insufficient emphasis on interpersonal skills, ethics and professionalism, and language skills. By contrast, some graduates of the new curriculum mentioned anatomy, microbiology, and diagnostic radiology as requiring more attention. The top five areas perceived as lacking were the same among the graduates of both the old and the new curricula. They were: business administration, law, professional English, life coaching, and humanities, which are related to both the pragmatic aspects of a clinical career and the personal growth of the graduates. A small percentage of graduates also took courses in these areas after their graduation. The survey has thus identified learning needs in the existing curriculum that need to be dealt with in the forthcoming 2012 curriculum.

Appendix

Additional material related to this article can be found on the HKMJ website. Please go to <<http://www.hkmj.org>>, search for the appropriate article, and click on Full Article in PDF following the title.

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Appendix. Questionnaire for investigating the learning needs of medical graduates in the medical curriculum

1. After working in the real clinical environment since your graduation, do you think there are any areas that were not emphasised enough in the curriculum? Please choose up to 3 choices.

- ☐ None
- | | |
|---|--|
| <input type="checkbox"/> Anaesthesiology | <input type="checkbox"/> Microbiology |
| <input type="checkbox"/> Anatomy | <input type="checkbox"/> Obstetrics and gynaecology |
| <input type="checkbox"/> Biochemistry | <input type="checkbox"/> Ophthalmology |
| <input type="checkbox"/> Clinical oncology and radiotherapy | <input type="checkbox"/> Orthopaedics and traumatology |
| <input type="checkbox"/> Community medicine | <input type="checkbox"/> Paediatrics and adolescent medicine |
| <input type="checkbox"/> Diagnostic radiology | <input type="checkbox"/> Pathology |
| <input type="checkbox"/> Embryology | <input type="checkbox"/> Pharmacology |
| <input type="checkbox"/> Family medicine | <input type="checkbox"/> Physiology |
| <input type="checkbox"/> Medical sociology and psychology | <input type="checkbox"/> Psychiatry |
| <input type="checkbox"/> Medicine | <input type="checkbox"/> Surgery |
-
- | | |
|---|---|
| <input type="checkbox"/> Clinical and diagnostic skills | <input type="checkbox"/> Language skills |
| <input type="checkbox"/> Communication skills | <input type="checkbox"/> Problem-solving skills |
| <input type="checkbox"/> Ethics and professionalism | <input type="checkbox"/> Research skills |
| <input type="checkbox"/> Interpersonal skills | |
| <input type="checkbox"/> Population health, health services, economics and policy | |
| <input type="checkbox"/> Others, please indicate _____ | |

2. Which of the following subjects / areas do you wish you had studied as a student in the medical faculty, but were not available? Please choose up to 3 choices.

- ☐ None, I had studied all the subjects / areas that I had wanted to study in the Faculty of Medicine.
- | | |
|---|---|
| <input type="checkbox"/> Business administration | <input type="checkbox"/> Philosophy |
| <input type="checkbox"/> Chinese culture | <input type="checkbox"/> Politics |
| <input type="checkbox"/> Fine arts | <input type="checkbox"/> Religious studies |
| <input type="checkbox"/> Humanities in general | <input type="checkbox"/> Social work |
| <input type="checkbox"/> Law | <input type="checkbox"/> Spirituality |
| <input type="checkbox"/> Life coaching / motivational courses | <input type="checkbox"/> Professional Chinese |
| <input type="checkbox"/> Literature | <input type="checkbox"/> Professional English |
| <input type="checkbox"/> Others, please indicate _____ | |

3. After graduation, have you taken any courses that are not directly related to the specialty you are working in? Please choose up to 3 choices.

- | | |
|---|---|
| <input type="checkbox"/> None | |
| <input type="checkbox"/> Business administration | <input type="checkbox"/> Philosophy |
| <input type="checkbox"/> Chinese culture | <input type="checkbox"/> Politics |
| <input type="checkbox"/> Fine arts | <input type="checkbox"/> Religious studies |
| <input type="checkbox"/> Humanities in general | <input type="checkbox"/> Social work |
| <input type="checkbox"/> Law | <input type="checkbox"/> Spirituality |
| <input type="checkbox"/> Life coaching / motivational courses | <input type="checkbox"/> Professional Chinese |
| <input type="checkbox"/> Literature | <input type="checkbox"/> Professional English |
| <input type="checkbox"/> Others, please indicate _____ | |