Article

Professional Development of Chinese-Origin Pharmacy Faculty Members in Western Countries

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Abstract: Background: Pharmacy education was experiencing the paucity of underrepresented minorities (URMs) faculty worldwide. The aim of this study was to investigate current professional status of Chinese-origin pharmacy faculty members, considered as a good model of URMs at pharmacy academia in western countries, and identify the influencing factors to their professional developments in academic careers. 2) Methods: An online questionnaire was sent to the ethnic Chinese or Chinese descent academic staffs at pharmacy schools in US, UK, Canada, Australia and New Zealand. The survey included demographic information, education background and the influencing factors to career developments. 3) Results: The vast majority of Chinese faculty members worked in US and mostly were male. Individuals with junior academic title had the largest proportion. Over 75% of Chinese-origin pharmacy academics were involved within scientific disciplines (e.g. pharmaceutics, pharmacology and medicinal chemistry). Usually, Chinese-origin academic members spent 4 years to obtain the first academic jobs after finishing PhD degree, while 5-6 years to get academic promotions. The contributing factors of academic promotion were high quality publications and external funding. 4) Conclusion: Our research offers a deep insight into professional developments for URMs to take their pharmacy academic paths.

Keywords: Underrepresented minorities; Chinese-origin faculty; professional development; academic; pharmacy.

INTRODUCTION

Today western countries become more and more racially and culturally diverse. A report from US Census Bureau showed that the population percentage of whites American in 2010 was 72.4% and that of minorities were nearly 30% (1). However, it was interesting that the minor racial academics were underrepresented in western academia. One report by National Center for Education Statistic (NCES) indicated that there were a total of 761,619 full-time faculty members at U.S degree-granting institutions in 2011. Among them, 79.3% of faculty members were White, while only 20.7% was URMs (Black, Hispanic, Asian, Pacific Islander and American Indian/Alaska Native). Asian showed the most obvious increase which was only from 7.6% in 2007 to 8.8% in 2011 (2). However, the ethnic differences had a profound effect on professional development of faculty members and career choice to undergraduates. Price E. G et al found racial differences lead to disparities in qualifications for training programs and subsequent career path to faculty positions (3). It revealed that some structural factors could hinder the recruitment and career advancements for URM faculty members, such as limited networking opportunities, confronting bias and stereotypes, and lack of ethnic role models and mentors. On the other hand, another studies reported that major ethnic groups in pharmacy applicant pool were associated with higher GPAs and pharmacy college admission test (PCATs) scores, and then more likely to get into pharmacy colleges (4).
Pharmacy education in US was experiencing the same challenges about ratio of URM students as dentistry, medicine and nursing (5). Recent study showed that the proposition of URM pharmacy faculty members (10% approximately) was much less than minority representation in general American population, and there was very little growth in the number of URM pharmacy students and faculty members from 1989 to 2009 (6). Nevertheless, the situation in UK pharmacy looked different from US pharmacy. One recent research investigated the first-year pharmacy students in 2012 at Aston pharmacy school in UK. Aston pharmacy program has a history of over 100 years and ranks top 5 among British pharmacy schools according to University Subject Table 2011 for pharmacy and pharmacology (7). In this research, it was found that over 70% of first-year students at Aston pharmacy school originated from Asian, while white students were less than 10% (8). American academic institutions should make effort to overcome these obstacles to make faculty workforce diverse.

Currently, there is no quantitative study to investigate professional development of racial minority pharmacy faculty members. Chinese, as an important part of URM, can be considered as a good model of the minorities at pharmacy academia. Thus, the aim of this study was to investigate professional current status and the influencing factors of Chinese-origin pharmacy faculty members in western countries to provide the view of academic path to URMs.

METHODOLOGY

Data collection and analysis

British academic system ranked from lecturer, senior lecturer, reader to professor, while American system included assistant professor, associate professor and professor. In this study, “Chinese-origin” faculty members were investigated as URMs. “Chinese-origin” referred to the ethnic Chinese or Chinese descent. Faculty members were the academic staffs containing lecturers/assistant professors, senior lecturers/associate professors and readers/professors in the university and research staffs were excluded. Firstly, we identified all possible “Chinese-origin” faculty members from the roster of British and American pharmacy schools. After that, we sent an email to confirm the “Chinese-origin” by the faculty themselves. After preliminary study, it was found that most of Chinese-origin pharmacy faculty members were in pharmacy schools of five western immigration countries: US, UK, Canada, Australia and New Zealand. Thus, list of the contact e-mails were obtained from the website of each accredited pharmacy schools of these five countries by the biography, name and photograph of academic staffs. An online survey (Google Form) was sent to each faculty member separately. This project had been approved by University of Macau (UM) Ethic Committee. Finally, the responses information was collected by Google Form. Data statistics were analyzed using SPSS version 19.0. The prior significance level was set at 0.05.

Questionnaire design

The questionnaire consisted of 3 sections and 20 questions as follows:

Demographic information:

The first section of survey included demographic information such as name, sex, age, country, institution, and academic discipline. Academic discipline contained pharmaceutics, pharmacology, medicinal chemistry, Clinic pharmacy (or pharmacy practice), pharmacy administration and others.

Educational background:

This section investigated the participants’ major and professional degrees (bachelor, master and PhD degree, respectively).
Career development:

The third section was mainly to obtain the information about their professional development of their academic careers, such as academic ranks and the influencing factors to the academic promotion. These influencing factors included high-quality publications, education background, research area, language skills, honors and awards, teaching, service, PhD supervision, recognition from peers, external fund supporting and network. These questions were based on a 5-point Likert scale (“Very important”, “Moderately important”, “Slightly important”, “Low important”, “Not important”). Last question was an open-ended question about participants’ suggestions to Chinese pharmacy education.

RESULTS

Professional status of current Chinese-origin pharmacy academics

Online surveys were sent to 331 Chinese-origin pharmacy faculty members and 59 effective responses were collected. The response rate was 18.8%. Fig. 1 showed the country distribution and gender of Chinese-origin pharmacy faculty. The vast majority of Chinese faculty members (275) were in US, accounting for 83% of total workforce (N=331). 66% of Chinese-origin pharmacy faculty members were male, while female was only approximately one third. This is in agreement with the sexual distribution of whole US faculty members (9).

![Fig. 1. Distribution of Chinese-origin faculty members by the gender and country (N=331)](image)

Table 1 indicated the distribution of each academic rank among countries. It was clearly shown that junior faculty members (assistant professor in American system or lecturer in British system) had the largest proportion (40.5%) and while 32.3% were middle-level academics (associate professor in American system or senior lecturer in British system), while only 27.2% were senior faculty members (such as reader and professor).

<table>
<thead>
<tr>
<th>Academic rank</th>
<th>No (%)</th>
</tr>
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<tbody>
<tr>
<td><strong>US</strong></td>
<td></td>
</tr>
<tr>
<td>Assistant Professor</td>
<td>114 (34.4)</td>
</tr>
<tr>
<td>Associate Professor</td>
<td>87 (26.3)</td>
</tr>
<tr>
<td>Professor</td>
<td>74 (22.4)</td>
</tr>
<tr>
<td><strong>UK</strong></td>
<td></td>
</tr>
<tr>
<td>Lecturer</td>
<td>10 (3.0)</td>
</tr>
<tr>
<td>Senior Lecturer</td>
<td>12 (3.6)</td>
</tr>
<tr>
<td>Reader/Professor</td>
<td>2 (0.6)</td>
</tr>
</tbody>
</table>

Table 1. Number of Chinese-origin faculty with different academic rank in each country (N=331)
Table 2 revealed the distribution of Chinese-origin faculty members by discipline and country. Most Chinese-origin faculty members were involved with scientific disciplines, such as pharmaceutics (26.9%), pharmacology (30.5%) and medicinal chemistry (19.1%), while only 16.6% of members majored in clinical pharmacy was only and 6.9% for pharmacy administration.

In addition, the data of Chinese-origin faculty members were compared with the Profile of Pharmacy Faculty from AACP’s 2015-16 current workforce in US pharmacy schools since the vast majority of the faculty members were in US pharmacy schools (9). Distribution of the faculty members by discipline and academic title were conducted shown in Figure 2 and 3. The discipline distribution of the Chinese-origin faculty members in US pharmacy schools was quite different from that in US. Over 60% of whole pharmacy faculty workforce in US majored in clinical pharmacy/pharmacy practice.
practice, while Chinese-origin percentage in this discipline was less than 20%. Figure 3 showed the
similar ratio of pharmacy faculty ranking between Chinese-origin and total members.

Fig. 2. Discipline of Chinese-origin faculty members in US pharmacy schools compared to whole US pharmacy workforce

Fig. 3. Academic title of Chinese-origin faculty members in US pharmacy schools compared to US whole pharmacy workforce.

Professional developments in pharmacy academia of Chinese faculty members

Table 3 indicated the responded statistics (n=59) for academic promotions of Chinese faculty members in their academic careers. Usually Chinese-origin academic members spent approximately 4 years to obtain the first academic jobs after finishing PhD degree. Moreover, it took them nearly 5-6 years to get academic promotion at each academic level.

<table>
<thead>
<tr>
<th>Promotion</th>
<th>Mean years spending</th>
<th>SD*</th>
</tr>
</thead>
<tbody>
<tr>
<td>From PhD to first academic job</td>
<td>4.3</td>
<td>2.2</td>
</tr>
<tr>
<td>From assistant professor/lecturer to</td>
<td></td>
<td></td>
</tr>
<tr>
<td>associate professor/senior lecturer</td>
<td>5.7</td>
<td>1.5</td>
</tr>
<tr>
<td>From associate professor/senior lecturer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>to professor</td>
<td>5.1</td>
<td>1.8</td>
</tr>
</tbody>
</table>

SD*=Standard Deviation
Fig. 4 indicated the importance ranking of the contributing factors to obtain the first academic jobs. Top three important factors were high quality publications, education background and research area. Language skills, strong reference and grant were moderately important to get their academic jobs. In addition, several representative arguments were raised by some faculty members. For example, academic pedigree or work experiences in pharmaceutical industry was also important to get the first academic jobs.

![Fig. 4. Ranking of contributing factors by importance in the first academic jobs for Chinese origin faculty (n=59)](image1)

Fig. 5 revealed the key factors to professional development for Chinese-descent pharmacy academics. It is no surprising that high quality publications and external fund supporting were two most important factors to their professional promotions. Recognition from international peers, honor/awards, teaching and PhD supervision were also considered important to professional advancement. In addition, some mentioned that generic skills, early occupation planning and participation in school affairs and leadership were also the significant factors to professional development.

![Fig. 5. Ranking of contributing factors by importance to professional development for Chinese pharmacy faculty members (n=59)](image2)

**DISCUSSION**
The results showed that most Chinese-origin pharmacy faculty members worked in US. One of the possible reasons might be that US has the largest number of accredited pharmacy schools (134) than any other western countries (UK (26), Canada (13), Australia (18) and New Zealand (2)). Another possible reason was that US was the first choice of higher education for Chinese students. One report showed that China-origin students in 2011 were 157,558, which made up over 20% of international students in US. The third explanation was that pharmacy education in US put more weight on faculty mentoring programs for future faculty developments and academic achievement (10). According to a nationwide survey in 2000, over 70% of US pharmacy schools had faculty mentoring program as the significant component of faculty development and academic environment (11).

The majority of members majored in scientific disciplines (e.g. pharmaceutics, pharmacology and medicinal chemistry), while that of clinical pharmacy was less than 20%. This was quite different from the distribution of academic staffs at pharmacy schools in western countries. Usually, the percentage of faculty members within clinical pharmacy accounted for over half of whole pharmacy faculty workforce, which was significantly more than that of other science-based disciplines (12,13). A possible reason for the big difference might be different mode of pharmacy education in China. In the past, the curriculum of Chinese pharmacy education mainly focused on chemistry courses, which was called as “chemistry models”. However, past pharmacy students in China were short of biomedical and clinical skills and practice experiences (14). In general, clinical-related training courses took over 2 years at most pharmacy schools in western countries, but clinical training in Chinese system was less than half-year (15). This was in agreement with the viewpoint from a respondent:

“Chinese pharmacy schools do not train professional pharmacists. This is strange. They should train both pharmacists and researchers.” (one faculty from Australia)

Our study also investigated professional development of Chinese-descent pharmacy faculty members. Usually it took nearly 5-6 years to get academic promotion, which was in agreement with tenure-track policy in American academic systems. Moreover, high quality publications played the most important role both in the process of getting their first academic jobs and professional advancements. Publications, in most institutions, were still seemed as the key factor for professional development in academia. In addition, external fund supporting was even more important due to the tight financial environment of universities. Today securing external funding was seemed as a crucial pathway for academic promotion (16).

CONCLUSION

Current research investigated professional development of Chinese-origin pharmacy faculty members in western countries. Most Chinese-descent pharmacy academics worked in science-related subject because of different pharmacy training models between western countries and China. Publications and external grant played the most important roles for professional developments of URM, while education background was critical for URM to get their first academic jobs. Our research offers a deep insight into professional developments for URM to take their academic paths in pharmacy and some valuable advices to Chinese pharmacy education.

REFERENCE