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Pharmacy: Factors that influence the choice of career and study options

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Abstract

The motivations for students who have previously commenced or completed degree studies in non-pharmacy programs to enter a pharmacy program are not clearly defined. In addition, the factors which may influence the selection of a traditional undergraduate vs the newly developed Master of Pharmacy (Graduate Entry) program are unknown. To understand the reasons why such students may choose pharmacy as a career option, students in the University of South Australia pharmacy program were surveyed at the commencement of the 2005 academic year. Participants were asked to score the influence of various factors on their decision to undertake the pharmacy program. The results indicated that future job prospects and a desire to make a contribution to healthcare were uppermost in participant's minds and the relative costs of the undergraduate and Graduate Entry programs were, not unexpectedly, major factors which influenced the choice of study pathway.

Keywords: *Career choice, Graduate Entry, survey, undergraduate*

Introduction

Throughout Australia, the Bachelor of Pharmacy is a high demand program, reflected by very high Tertiary Entry Rank (TER) cut-off scores in all states. Students who wish to enter university directly from secondary school apply, and are accepted, into tertiary programs based on secondary school achievement whilst those who have undertaken tertiary studies may be scored on the grade point average achieved in their degree. Student achievement in all Australian states (except Queensland) is reported on the same scale, called, depending on the state, the TER, the Universities Admission Index or Equivalent National Tertiary Entrance Rank. These scores range between 99.95 (highest rank) and 0, and report the student's rank position relative to all other students. At the University of South Australia the increased demand for entry into the Bachelor of Pharmacy program is reflected by the increasing TER required for entry; from 96.4 in 2003 to 97.9 in 2004 and 99.5 in 2005.

The demand for the undergraduate Bachelor of Pharmacy program is partly fuelled by a national and international shortage of qualified pharmacists, and subsequent employment prospects for graduates. A 2003 study of the demand and supply of pharmacists for the National Pharmacy Workforce reference group found that there was an undersupply of community and hospital pharmacists in Australia in 1999. It was projected that the shortfall would continue beyond 2010 (Health Care Intelligence Pty Ltd, 2003). The National and State Skill Shortage List for Professionals (February 2004), lists pharmacy as a profession where there is a national skills shortage (Department of Employment and Workplace Relations, 2004). Across Australia, pharmacy graduates are reported to have a 99.1% employment rate within 4 months of completing their degree (Graduate Careers Council of Australia, 2004).

In response to this shortage there has been sustained pressure by the profession to increase the number of pharmacy graduates. Within Australia this pressure has resulted in established pharmacy schools increasing their intake, the opening of a number of new pharmacy schools, and, more recently, with the establishment of Graduate Entry pharmacy programs at several universities.

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To complement its current undergraduate pharmacy program, the School of Pharmacy and Medical Sciences at the University of South Australia has developed a full fee paying Master of Pharmacy (Graduate Entry) program, anticipating that this program will be desirable to students who have recently completed Science and Biomedical degrees. The program is intense, running over six semesters in two calendar years. To be considered for entry, applicants must have completed all requirements for a previous degree, obtaining a credit average. At the University of South Australia, a credit is awarded in a course for a mark between 65 and 74, and generally indicates work of high quality showing strong grasp of subject matter and appreciation of dominant issues. This requirement indicates that the student needs a strong, but not necessarily exceptional record. They must also have completed set tertiary courses such as chemistry, mathematics and statistics, physiology, biochemistry and microbiology. Graduates of the program will, therefore, have an alternate pathway to the undergraduate pharmacy degree, for potential registration as a pharmacist.

The majority of Australian undergraduate students in tertiary education pay for a proportion of the costs of their higher education through the Higher Education Contribution Scheme (HECS). Students may choose to defer payment of this contribution until they are receiving a threshold salary for debt repayment. Within this framework, universities have been also been permitted to charge an upfront fee for postgraduate programs (Chapman & Ryan, 2002). The undergraduate Bachelor of Pharmacy program is HECS based whilst the Master of Pharmacy (Graduate Entry) program will be "upfront" full fee paying.

As indicated above, the undergraduate pharmacy program is in high demand. In 2004, of the 760 applications submitted for the Bachelor of Pharmacy program, 247 were from applicants who had commenced or completed other degree programs. Within the current total cohort of 412 pharmacy students there are 96 students who have commenced other degree programs before entering into the pharmacy program. Of these, 14 students have commenced or completed postgraduate degree programs, including PhD programs, and 35 have completed a previous undergraduate degree.

Prior to the implementation of the Graduate Entry program it was deemed prudent to establish the feasibility of the program in terms of attracting potential students and the likely impact of the Graduate Entry program on the student intake into the current Bachelor of Pharmacy. Therefore, current pharmacy undergraduate students who have previously undertaken or completed studies in programs other than pharmacy were surveyed to determine the reasons why these students entered the undergraduate pharmacy program. Secondly, we have sought to establish the factors which would have determined their likelihood of undertaking the Master of Pharmacy (Graduate Entry) program rather than the undergraduate Bachelor of Pharmacy or vice versa.

Materials and methods

The Research study was approved by the University of South Australia Human Ethics Committee (HREC), protocol P159/04. The research was divided into two stages: focus groups to formulate questions around reasons for choice of pharmacy as a prospective career and issues around the Master of Pharmacy (Graduate Entry) program (late 2004) and then an online survey using these questions (early 2005).

Potential focus group participants were identified by emailing enrolled undergraduate pharmacy students. Those who responded, indicating that they had previously undertaken tertiary study and were willing to participate in the focus group research, took part in a small group discussion to highlight potential questions and issues. The focus group responded to questions as a starting point for discussions. Questions were then formulated for the online survey and approved by HREC. The questionnaire was made available through the University of South Australia online tool *TellUs*. All students enrolled in the undergraduate pharmacy program, and those who had participated in the focus group previously (including pre-registrants who completed their university study in December 2005), were emailed and asked to respond indicating that they were prepared to participate in the online study. The web link to the online survey was then sent to only those students to ensure that the data was only gathered from the group of students who had previously commenced or completed tertiary studies in programs other than pharmacy. Data collected through the online tool *TellUs* is automatically anonymised.

Demographic information and open-ended response data was collated and summarized. The interpolated medium was used to analyse Likert-scale responses. Data from University student records were used to confirm previous study status of the enrolled students.

Results

Forty five of the 96 eligible students responded to the invitation to participate in the online survey. Of these students, 16 were in the first year of the program, 9 in the second year, 4 in the third year, 15 in the fourth year and there was one pre-registration graduate.

Participants had undertaken study in various Bachelor of Science programs (11 participants), Bachelor of Biomedical Science or allied health professional degree programs (11 participants),

Bachelor of Biotechnology programs (7 participants), pharmaceutics related programs, e.g. Higher Diploma in Pharmaceutical Sciences (5 participants), specific pre-pharmacy preparatory programs (2 participants), Bachelor of Engineering (2 participants), Bachelor of Commerce (2 participants), Bachelor of Education (1 participants), Bachelor of Veterinary Science (1 participants), Bachelor of Food and Nutrition (1 participant), and Bachelor of Technology (1 participant), whilst 2 participants did not specify their previous programs of study.

Table I presents compiled data from all Likert-scale questions. Data indicate that future job prospects and a desire to make a contribution to healthcare were uppermost in participant's minds when choosing to undertake studies in a pharmacy program after already having undertaken studies in a previous degree. The status of pharmacy degree, recognition of prior learning, a desire to own their own business and the degree of overlap between previous education and the pharmacy program were of lesser importance. A desire to work in the pharmaceutical industry or in rural a pharmacy were of less importance again and child care facility availability was the least important concern for survey participants.

Turning to the comparison between choice of the undergraduate pharmacy program and the Master of Pharmacy (Graduate Entry) program, data in Table I indicate that participants would find obtaining fees difficult for the latter program and that the cost of the Master of Pharmacy (Graduate Entry) program would be an important consideration. The cost of undertaking the HECS based undergraduate pharmacy program was not considered to be as important for survey participants.

Survey participants given the alternative choices of entry into the current HECS-based Bachelor of Pharmacy program and the 2 years full-fee Master of Pharmacy (Graduate Entry) program (based on an annual cost of $20,000–$25,000) overwhelmingly chose the Bachelor of Pharmacy program (26 participants) as compared to the Master of Pharmacy (Graduate Entry) program (7 participants) with 10 participants indicating no preference for either option.

Of the 23 respondents who commented further on this, 11 indicated that the cost is a major factor that would prevent them entering the Masters program. Nine of the students reiterated this when given an opportunity to again comment further. Comments included:

> "The only reason I can't do the masters degree is I can't afford it".

> "Obviously as a student, and like many of the other students, would not have access to that sort of money, and I didn't feel it was fair to put that kind of burden on my parents. In fact,..... I don't think they could actually afford it".

> " I struggle to afford the time spent away from work to study the bachelors program, especially with the workload. Paying full fees would make it impossible".

Conversely, one student who did not qualify for HECS considered that the Master of Pharmacy (Graduate Entry) program to be a better option in terms of costs.

Four respondents indicated that the shorter time involved in undertaking the Master of Pharmacy (Graduate Entry) program was appealing, conversely two respondents were concerned about the recognition of the degree by the registering body and an additional two respondents were concerned that the Master of Pharmacy program may not have the same appeal for prospective employers as the undergraduate program.

When asked about the preferred structure of the Master of Pharmacy (Graduate Entry) program, 22 of the 42 respondents indicated that the current proposal for this program to be run as three semesters per year over 2 years is the preferred program structure. Comments regarding program structure included:

> "better to get it done quicker, so entry into the workforce is possible sooner".

However, 17 of the 42 respondents expressed a preference for 3 years with two semesters per year. The main reasons for this preference revolved around two concerns: the quality of learning may be reduced in the intense program and the need to earn money during the holiday period.

Responses to the question of the qualities required for those intending to undertake the Master of Pharmacy (Graduate Entry) program included a background in science or health science subjects (22 respondents), high grades during previous study (credit average or above typically quoted) (10 respondents), good communication skills (8 respondents, 2 of whom suggested an interview), enthusiasm (5 respondents), life/work experience (2 respondents) and good people skills (1 respondent).

Responses to the question of essential features of the Master of Pharmacy (Graduate Entry) program included provision of a good knowledge base (7 respondents), flexibility of study including option of part time (6 respondents), placements/work experience (4 respondents, 1 suggesting paid placements), relevance to real world (3), structure and support (2), assessment not too difficult (2) whilst 4 respondents were "not sure".

Further comments relating to this question focussed mainly on cost as the main issue (5 respondents), with several suggestions that scholarships be made

Table I. Responses to the Likert questions used in the online survey ranked in order of importance.

	Number of students choosing each response					
	1	2	3	4	5	Interpolated median
Rate the importance of future employment prospects as a factor when choosing entry into the pharmacy program	32	9	4	0	0	1.20
Rate the importance of the desire to make a contribution to healthcare as a factor when choosing entry into the pharmacy program	23	19	2	1	0	1.48
Assuming that you were willing to undertake the Masters Program would obtaining the fees be difficult	23	7	10	2	3	1.48
Rate the importance of the costs of studying for two fee-paying years in the graduate entry pharmacy program	21	14	7	2	0	1.56
Rate the importance of the status of having a degree in pharmacy as a factor when choosing entry into the pharmacy program	19	8	12	6	0	1.94
Rate the importance of the recognition of prior learning as a factor when choosing entry into the pharmacy program	15	16	11	2	1	1.97
Rate the importance of a desire to work in a clinical setting when choosing entry into the pharmacy program	12	17	15	1	0	2.11
Rate the importance of the desire to own a business as a factor when choosing entry into the pharmacy program	12	15	12	4	2	2.20
Rate the importance of the degree of overlap between previous education and the pharmacy program as a factor when choosing entry into the pharmacy program	10	11	14	5	5	2.63
Rate the importance of the costs of studying for the HECs based pharmacy program as a factor when choosing entry into the pharmacy program	7	10	14	4	10	2.89
Rate the importance of workload in the pharmacy program as a factor when choosing entry into the pharmacy program	3	12	17	7	5	2.91
Rate the importance of the timing of the intake into the undergraduate pharmacy program	6	7	22	6	4	2.92
Rate the importance of the desire to work in the pharmaceutical industry as a factor when choosing entry into the pharmacy program	4	8	16	11	6	3.14
Rate the importance of the option to study part-time in the pharmacy degree as a factor when choosing entry into the pharmacy program	1	5	15	8	16	3.72
Rate the importance of opportunities to work in a rural pharmacy as a factor when choosing entry into the pharmacy program	2	8	10	10	15	3.77
Rate the importance of the availability of childcare facilities	1	5	8	6	24	4.59

Median scores tending towards 1 indicate a high level of importance, whereas, scores towards 5 indicating low importance. $n = 45$.

available. Recognition of the Master of Pharmacy (Graduate Entry) program was again highlighted (1 respondent) and the availability of trainee positions raised as a concern (1 respondent).

Discussion

The aim of this study was to determine the reasons why students who had commenced or completed another tertiary degree entered the undergraduate pharmacy program.

Employment prospects were uppermost in the minds of our respondents. As indicated above, pharmacy has good employment prospects, whilst graduates of other programs may have poorer prospects. For example, only 70% of computer science graduates are employed 4 months after graduation with the remainder seeking full time or part time employment (Graduate Careers Council of Australia, 2004). Interestingly, strong employment prospects are listed as one of the rewards of a university education in information provided to school students through the Graduate Careers Council of Australia (2004), therefore, it is likely that this reinforces the notion that potential career prospects is an "appropriate" and, indeed, important consideration when choosing a tertiary education program.

The participants' desire to make a contribution to health care is consistent with other studies which have looked at the reasons behind students' choice of health care professions. A study of US female pharmacy students found that the primary reason for choice of profession was "want a career in the health field" (Rascati, 1990). A recent Australian study which looked at medical radiation student and speech pathology student career choice found that only 7% of their entire study sample had considered a field of study that was not classified as a health science (Adamson, Covic, Kench & Lincoln, 2003). Similarly, in the UK study of dentistry, students only 12% of the participants indicated consideration of non-health care professions (Hallissey, Hannigan & Ray, 2000). In each case, there is a strong interest by the students in a health care study program. As pharmacy practice continues to emphasise patient interface it is encouraging to see that a contribution to health care is of more significance to the survey participants than the status of the degree.

Our respondents did not indicate that the opportunities to work in a rural community had been an important factor when choosing to enter the pharmacy program. Rural areas of Australia have been identified as having an increasing shortage of pharmacists (Health Care Intelligence Pty Ltd, 2003). To address these shortages, strategies of establishing pharmacy degree programs in rural settings and online preceptor education programs (Marriott et al., 2005) have been initiated and in fact may be warranted if our respondents are indicative of students in city campuses.

Respondents did not indicate that the opportunities to work in the pharmaceutical industry had been an important factor when choosing to enter the pharmacy program. This may reflect the comparative lack of presence of large pharmaceutical companies in South Australia but also the comparative lack of promotion of this particular career path for pharmacy graduates within the current program. Strategies to increase awareness of both national and international career prospects within the pharmaceutical industry may, therefore be warranted. Indeed, heightened awareness of these career paths amongst prospective students could prove an effective means of attracting students into the program who are looking for careers outside of primary health care. Attracting such students into the Graduate program would provide a more heterogeneous student cohort which may have benefits in terms of broadening the focus of the teaching and learning within the program and producing more rounded graduates.

The lowest scoring question was related to the provision of childcare facilities (Table I). This question was included because an area which was highlighted during the focus group discussions was that Graduate Entry students will, by definition, be older than the 18 years old graduate that might typically enter the undergraduate program. The argument put forward was that with increasing age comes increasing responsibilities, particularly in terms of having to pay a mortgage and look after a family including young children. It was therefore surprising that the question regarding the importance of availability of childcare scored so poorly in the online questionnaire. Similarly, questions around workload and the option to study part-time, which would allow greater flexibility when trying to balance home life and academic studies, also appear to be of little importance to most students. This would suggest that the majority of the tertiary transfer students within the current undergraduate program have not yet settled down to have families. Whether this is a reflection of a general trend in society of having children later in life, or whether the length and intensity of study required to complete the undergraduate program means that students with young, children are, in effect, precluded from entry in pharmacy is an unknown. If it is the former, then that results suggest that balancing studies with family life is not a major issue for potential Graduate Entry students. If it is the latter, then may need to be implemented to allow equity of access for potential students with families into the Graduate Entry program.

Our study also sought to establish the factors which would have determined whether students who had previously commenced or completed another tertiary degree considered undertaking the Master of

Pharmacy (Graduate Entry) program rather than the undergraduate Bachelor of Pharmacy or vice versa.

The most significant outcome from this study is that these participants do not overwhelmingly consider the two-year fee-paying Master in Pharmacy (Graduate Entry) program is a good alternative to the 4 years HECS based undergraduate Bachelor of Pharmacy program as a means to obtaining the base academic requirements for registration as a pharmacist. The primary reason given for this was the cost of the Graduate Entry program; however, some reservations were expressed regarding the recognition of the program and the "quality" of the learning experience. Having concluded this, the students surveyed were already studying in a 4 years program and would not be likely to acknowledge that other alternatives may be superior. The costs of the 2 years full fee paying Master of Pharmacy (Graduate Entry) program and the 4 years HECS based undergraduate Bachelor of Pharmacy program are not remarkably different. This similarity is apparent even when one considers credit which could be awarded for courses previously completed within the four year program and costs of living for four rather than two years. However, deferral of fees is not possible in the Graduate Entry program. In 2002, 79% of students in HECS based programs deferred payment of HECS (Australian Bureau of Statistics, 2002). Information was not requested about deferral of HECS in the survey, however, it is predict that respondent's views, with respect to the question of costs, may reflect HECS deferral rather than cost structure as such. It is important to note that some student groups, for example, international students, are not eligible for HECS whilst other student groups, for example, permanent residents, are not able to defer HECS payments.

Conclusion

Tertiary transfer students represent up to a quarter of the intake into the undergraduate pharmacy program at the University of South Australia. The main drivers for these students to enter pharmacy are good employment prospects and the desire to make a contribution to healthcare. This study suggests that the introduction of the Graduate Entry program is unlikely to have a large impact on the numbers of tertiary transfer students entering the undergraduate program. The main reason for this is that paying the course fees up-front is seen as prohibitive. It can therefore, be concluded that students entering the Graduate Entry program are likely to have different characteristics to those currently entering into the undergraduate program. Primarily, these will be students who do not qualify for HECS. It is also possible that the Graduate Entry program will attract students looking to gain rapid entry into the workforce or students with family commitments who are currently put-off from entering the undergraduate program.

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