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Inventory of the employment possibilities for Bachelors of Pharmacy in the Netherlands

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Abstract

By signing the Bologna declaration 29 countries agreed to adopt a higher education system based on two main cycles, with the degree awarded after the first cycle being relevant to the European job market as an appropriate level of qualification. This study was performed to investigate the existence of job opportunities for Bachelors of Pharmacy in the Netherlands and to establish the desired learning outcomes for the bachelor programme. The results show that Bachelors of Pharmacy can be employed in the Dutch market, particularly within the pharmaceutical industry, hospital pharmacy, and drug registration. However, the expectations of the job market do not fully coincide with the knowledge and skills of the current Bachelors of Pharmacy. In addition changes in the curriculum, academic and governmental policies will determine whether a Bachelor of Pharmacy degree will be considered as an entrance to the job market.

Keywords: *Bologna declaration, Bachelors of Pharmacy, job market*

Introduction

The Bologna declaration, signed in 1999 by 29 countries, is considered a turning point in the development of European higher education. By signing, the participating countries declare that they have a clearly defined common goal: "to create a European space for higher education in order to enhance the employability and mobility of citizens and to increase the international competitiveness of European higher education" (Confederation of EU Rectors' Conferences and the Association of European Universities (CRE) 2000, Bologna Secretariat 2007). The Bologna declaration has a defined set of specified objectives with one objective being the adaptation of a system based on two main cycles, undergraduate and graduate. In this system access to the second cycle is only permitted when the first cycle, lasting a minimum of three years, has been successfully completed. In addition, an important statement in the Bologna declaration is that the degree awarded after the first cycle must be relevant to the European job market as an appropriate level of qualification (Confederation of EU Rectors' Conferences and the Association of European Universities (CRE) 2000, Bologna Secretariat 2007).

However, in the Netherlands the general way of thinking about academic education by the Universities, as well as by the students, the government and the job market, is still that a bachelor programme prepares students for a master programme. This opinion is reflected by the results of a study performed in 2005 among 2500 Dutch bachelor students of different disciplines; of these students 83% indicated that they want to continue with a master programme after completing their bachelor, while only 1% wants to stop. The other 16% of the students were undecided (Intermediair, Ebbinge & Company 2005). These results are confirmed by the annual *Studentenmonitor* Questionnaire of 2006 where 87% of full-time bachelor students in universities indicated that they plan to continue their study in the master phase (Van den Broek, Wartenbergh et al. 2007). In another study, employers indicate that they do not see the university bachelor degree as a full academic degree, or as having close links with the job market (Westerheijden, Cremonini et al. 2008). Furthermore, from a university perspective, the lack of interest in making the university bachelor a qualification for the job market is reflected by the fact that in 2005 more than half of the Dutch university bachelor programmes did not have a clear job market qualification (NVAO 2007). An extra difficulty within Dutch Higher Education is the existence of a binary system of higher education. Besides the three year university bachelor programmes, more vocationally-oriented higher education institutions (HBO), like polytechnics, provide 4 year bachelor

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education programmes aimed at the job market. Universities are bound by this distinction of the binary system and have to make sure that the university bachelor will not enter the territory of HBO bachelors (Westerheijden, Cremonini et al. 2008). So, all together, in the Netherlands, the university bachelor programme, in contrast to the HBO bachelor programme, is not considered as a programme that prepares the students for a position in the job market.

At the department of Pharmaceutical Sciences of the University of Utrecht, in accordance with the Bologna Declaration, the undergraduate (bachelor) and graduate (master) system was implemented in 2001, both phases lasting 3 years. However, despite this subdivision, and according to the current way of thinking in the Netherlands, the Pharmacy curriculum is looked at as a six year integrated programme, followed by almost all students, preparing them for the profession of pharmacist. This is in line with the goal of the European Association of Faculties of Pharmacy (EAFP) stating that: "to meet the current and future needs of professionals, a model for Pharmacy Education based on a minimum 5 year programme is needed'' (European Association of Faculties of Pharmacy (EAFP) 2008). Like many other Faculties of Pharmacy in Europe, the education of pharmacists in the Netherlands consists of a compulsory curriculum of more than three years. Other jobs within pharmacy practice in the Netherlands are fulfilled by HBO bachelors, like laboratory and pharmacy technicians or pharmaceutical managers, or by people educated at secondary vocational level (MBO), such as pharmacy assistants.

Until recently there has never been a reason to design an independent bachelor programme for the Pharmacy curriculum at the University of Utrecht. However, in 2006 the curriculum was assessed by the Quality Assurance Netherlands Universities (QANU) in order to obtain accreditation by the Dutch Flemish Accreditation Organization (NVAO), responsible for accreditation of higher education programmes in the Netherlands. In their report the QANU emphasized that the bachelor programme of the Pharmacy curriculum must also be an independent programme aimed at the needs of the job market (Quality Assurance Netherlands Universities (QANU) 2006). To be able to fulfil the expectations of the QANU and Bologna, and in order to define independent learning outcomes for the bachelor programme, the first necessity is to identify whether there is indeed a job market for students with a three year Bachelor of Pharmacy in the Netherlands. In addition, it is important to determine the qualifications potential employers would expect from these graduate bachelors.

The aim of this study was to investigate whether there are job opportunities for Bachelors of Pharmacy in the Netherlands, and to obtain more insight in the expectations of the job market considering the knowledge and skills of Bachelors of Pharmacy.

Method

Interviews

A total of 33 interviews, each lasting approximately 1 to 1.5 h, were conducted with subjects representing seven different categories of possible employers of Bachelors of Pharmacy: the department of Pharmaceutical Sciences, pharmaceutical industry, hospital pharmacy, independent community pharmacy, drug registration authorities, health insurance companies and pharmacy chains. In order to obtain an objective and valid result, within each category at least three different organisations were represented (with the exception of the health insurance companies) (table I).

Category	**Number of participants**
Department of Pharmaceutical Sciences	6
Pharmaceutical industry	8
Hospital pharmacy	5
Community pharmacy (independent)	6
Drug registration authorities	4
Health insurance companies	1
Pharmacy chains	3
Polytechnics	3

Table I: Overview of participants

For the pharmaceutical industry, organisations were chosen in a way to cover the broad spectrum of tasks of a pharmacist within industry: production, quality assurance, research and development, and regulatory affairs. Among the participants coming from industry also small specialised companies were included such as companies specialized in PK/PD modelling and in drug development. In general most interviews were face -to-face (with the exception of one telephone interview).

The two main questions asked were:

Do you see job opportunities for a Bachelor of Pharmacy within your company/organization?

If positive, what kind of knowledge and skills would you expect from a Bachelor of Pharmacy?

Report

During each interview notes were taken. Afterwards these notes were elaborated in a short report. This report was send to the subjects by email and the subjects could comment on the report. Comments made were integrated into a final report which was used for the analysis of the results.

Analysis

To quantitatively and qualitatively analyse the results of the interviews the text-analysis software programme MAXqda2 was used. For analysis of the interviews with MAXqda2 a hierarchical coding structure was used to facilitate initial

identification of broad themes (e.g., categories of possible employers) and to allow new codes to be added to sub-divide themes objectively for deeper interpretation, evaluation and qualitative coupling (e.g., job opportunities, knowledge and skills).

For the quantitative data analysis, the participants expressing a distinct opinion were coupled to the different (sub)-categories and manually counted. When two or more subjects representing one organisation were present at the interview, they were counted as one participant, unless they explicitly expressed a different view. Only when subjects specifically mentioned that, to their opinion, Bachelors of Pharmacy are unsuitable for a certain job, this was counted as no job opportunity ("No" (see table II)).

Table II: Employment possibilities for Bachelors of Pharmacy

Employment possibilities for Bachelors of Pharmacy divided in 5 categories. In the table the number of participants that sees job opportunities (yes) or has the opinion that Bachelors of Pharmacy or not suitable for a certain place of work (no) are depicted.

	Number of participants	
Place of Work	**Yes**	**No**
Industry		
Regulatory Affairs including product registration	6	
Production and Quality Assurance	2	1
Research and development (eg. pharmaceutical technology)	2	
Clinical Trials	2	
District manager, medical representative	2	
Industry in general		1
Community pharmacy		
Community pharmacy in general	4	7
Pharmaceutical patient care, preparation and project management, information	4	
Management, back office tasks	2	
Preparation and delivery of drugs	1	
Communication with health assurance companies	1	
Hospital Pharmacy		
On the level of preparation: Quality control and management, instant preparation, product development, analyses, management as unit-head, contributing to the Investigational Medicinal Product Dossier (IMPD), functional support and logistics	5	
On the level of patient care: Administration of the drug files of patients, prepare drug overviews for meetings with physicians, answer questions of physicians, treatment suggestions for patients on monotherapy	3	2
Drug Registration		
Value judgement	3	
Clinical Trials	3	1
Clinical Research Associate	1	
Pharmacovigilance	2	1
Other		
Chemist	2	1
Pharmacokinetics and PK/PD-modelling	3	
The Health Care Insurance Board		1

Results

Employment possibilities

The job opportunities for Bachelors of Pharmacy can be divided into five categories: pharmaceutical industry, community pharmacy, hospital pharmacy, drug registration authorities and others. The results of the opinions of the participants of this study are summarized in table II. For each category all opinions expressed are included, irrespective of the professional working environment of the interviewee. As an example, when a participant from industry had a distinct opinion about job opportunities for Bachelors of Pharmacy in the hospital pharmacy, this was included in the category hospital pharmacy.

Pharmaceutical Industry

Within the pharmaceutical industry the participants see many job opportunities for Bachelors of Pharmacy. In the area of drug development specifically pharmaceutical technology, quality control and product release were mentioned. A well-educated bachelor, with knowledge of, and affinity with, pharmaceutical technology, could easily fulfil these kinds of activities. For Quality Assurance and the analytical laboratory, specialists are needed and the participants therefore see no opportunities there for Bachelors of Pharmacy.

In addition, the industry has a high demand for workers in the drug registration and regulatory affairs, and a bachelor with the right knowledge could, according to the participants, definitely get a job within this area. Furthermore, a Bachelor of Pharmacy could, according to some participants, also start as a monitor or data manager of clinical trials.

Another branch within the pharmaceutical industry is the wholesale business. In the view of one participant there are employment possibilities within the wholesale business for people having an affinity with medicines. In the end, working as a district manager or medical representative was mentioned as job opportunity for Bachelors of Pharmacy.

Of the eight participants coming from the pharmaceutical industry, one participant did not see any job opportunity at all for Bachelors of Pharmacy. In his opinion, the industry has a need for fully educated pharmacists, masters of Pharmaceutical Science and laboratory technicians with a lot of practical experience.

Community Pharmacy

There is a large variation in the opinions of the participants about employment possibilities for Bachelors of Pharmacy within the community pharmacy. A total of 7 participants, one

coming from a pharmacy chain organisation indicated that they don't see any job opportunities for bachelors in the community pharmacy at all.

There are, however, also 4 participants (two representing a pharmacy chain), who do see employment possibilities for Bachelors of Pharmacy in the community pharmacy. A bachelor trained in pharmaceutical patient care could be involved in informing patients or groups of patients, the preparation and planning of (educational) projects for patients, supervision of drug use, preparation and delivery of drugs, and in the area of management and back office tasks.

Hospital Pharmacy

All five participants coming from the hospital pharmacy indicate that there is a need for Bachelors of Pharmacy. This need is caused by the large gap between the level of knowledge and skills of the hospital pharmacists and the pharmacy assistants working in the hospital. In the opinion of the participants, there are a number of tasks for which a bachelor would be highly suitable. In the hospital, in the area of the preparation of drugs, tasks for bachelors could be: quality control and management, instant preparation, product development, chemical analyses, management as unit-head, contributing to the Investigational Medicinal Product Dossier, functional support, and logistics.

Other possible employment possibilities lie within the area of patient care. Especially within the indirect patient care the participants see opportunities for bachelors like administration of the drug files of patients, preparation of drug overviews for meetings with physicians, answering questions of physicians, and involvement in the treatment of patients on monotherapy. However, considering the role of Bachelors of Pharmacy in patient care there is a difference of opinion between the participants, as some participants believe that a bachelor of three years is a too short period of time to acquire the knowledge and skills necessary for patients care in the hospital pharmacy.

Drug registration authorities

In the Netherlands there are a number of institutes and organizations that are involved in the registration of drugs such as the National Institute for Public Health and The Environment (RIVM) and the Medicines Evaluation Board (CBG). For job opportunities in the area of drug registration within the industry the reader is referred to the 'Pharmaceutical Industry' section.

Both the RIVM and the CBG indicate to have employment possibilities for Bachelors of Pharmacy. For the more specialized tasks in the evaluation of new biological drugs or medical technologies at the RIVM, and the judgment of new, international, drug applications at the CBG, a Bachelor of Pharmacy is considered unsuitable. For these functions a master degree is required.

An important aspect of drug registration files are the clinical trials. A number of participants see job opportunities for bachelors in the monitoring of clinical trials, management of the trials and data collection, and as Clinical Research Associate. However, the Centre for Human Drug Research, a university-linked contract research organization that provides a full spectrum of high quality clinical pharmacology services to the (bio-) pharmaceutical industry, does not see employment possibilities for bachelors.

Two participants (one from the industry) suggest that bachelors might find a job within pharmacovigilance, especially to fulfil the duties of the marketing authorisation holders. On the contrary, the Netherlands Pharmacovigilance Centre LAREB, that has a central role in pharmacovigilance in the Netherlands, did not want to participate in this study because they did not see any job opportunities for bachelors within their organisation.

Others

One participant mentioned working as a chemist in a drugstore as a possible profession for Bachelors of Pharmacy. Based on this, an interview was held with the Central Bureau of chemist companies (CBD). As the professions of chemist and pharmacist are closely related, it would be a logical step for a bachelor to work as a chemist in a drugstore. However, because bachelors are considered to be overqualified for a job as chemist, another participant doubts this job perspective for bachelors.

Pharmacokinetics and PK/PD-modelling is a strong growing field of activity, both within the organisations involved in the registration of drugs, as well as within specialised companies and the pharmaceutical industry. To the opinion of several participants, the broader oriented Bachelor of Pharmacy would be highly suitable for jobs within this field of work.

Conclusion

There are several employment possibilities for Bachelors of Pharmacy, especially within the pharmaceutical industry, hospital pharmacy, drug registration and PK/PD-modelling.

The interviewed participants indicate that within most of these work areas, related functions are currently being fulfilled by people with an HBO bachelor, such as laboratory and pharmacy technicians or pharmaceutical managers, for which extensive training on-the-job is necessary. The added value of the academic bachelor, above HBO bachelors, would be the broad orientation on pharmaceutical science, and the academic knowledge and skills.

Knowledge and skills

The second aim of this study was to make an inventory of the knowledge and skills the job market expects from a Bachelor of Pharmacy.

In general the participants agree on the fact that the strength of a Bachelor of Pharmacy is the knowledge of, and the affinity with, medicines in the broadest sense of the word. A bachelor must have a basic knowledge that provides him or her with an image of the pharmaceutical profession. Training on-the-job will further enlarge and deepen this knowledge.

Another point of attention, mentioned by many participants, is that it is important that the pharmacy curriculum is job-based

and practice-related. The use of examples and education material originating from the daily practice of the employment market is highly recommended.

A number of views regarding knowledge are very explicit (Table III). Both the industries, and organisations involved in the drug registration process, mention the great need for people with knowledge of regulatory affairs and drug registration, even on a bachelor level.

Table III: Knowledge expected of Bachelors of Pharmacy by the job market.

Number of participants expecting a certain type of knowledge from Bachelors of Pharmacy. The table is divided into 5 categories representing different fields of work; I = Pharmaceutical Industry, CP = Community Pharmacy, HP = Hospital Pharmacy, R = Drug registration, O = Others (eg. health insurance, chemist), T = total

Knowledge	I	CP	HP	R	O	T
Pharmacotherapy, patient care	1	4	3	1	1	10
(Bio)Analytical Chemistry, pharmacochemistry, physical chemistry	3	2	2	2		9
Pharmaceutical technology: product formulation, product development, process technology, quality assurance, industrial technology	5	1	1			7
Basic pharmacology, (patho)physiology	2	2		2		6
Regulatory Affairs, GMP/GLP	4			2		6
Basic knowledge of, and affinity with drugs	2	1	1			4
Organisation and practice of a hospital/community pharmacy	1	3				4
Biopharmaceutical science, quality control	1	1	1			3
Preparation and formulation of drugs	2	1				3
Pharmacokinetics	2			1		3
Statistics	1			2		3
Healthcare systems and the patient in the Netherlands		1	1	1		3
Toxicology and risk assessment	1			1		2
Health assurance		2				2
Finance, logistics, management, administration		2				2
Over-the-Counter Medicines					1	1
Clinical chemistry	1					1
Basic beta science	1					1
New developments - biotechnology	1					1
Drug discovery and development				1		1

It is also striking that a number of participants mention pharmacotherapy, as currently this is not a major part of the Bachelor of Pharmacy curriculum in the Netherlands. However, in contrast to the knowledge of a Master of Pharmacy, the participants feel that the bachelor does not have to be a generalist, but must have a basic knowledge of a certain subarea, and the pharmacological concepts of drugs. To educate bachelors that can work in the field of pharmaceutical patient care it is important that they are confronted with the daily practice of working with patients, right from the start of the study programme. This could be achieved using real patient cases or traineeships. In addition, bachelors need to be knowledgeable about the organisation of the community pharmacy, the hospital pharmacy and the healthcare system in the Netherlands. More pharmacotherapy and job-related education in the bachelor could, according to some participants, also improve the motivation and the learning efforts of the students.

From an industrial perspective, two kinds of job opportunities can be distinguished. The first is the area of production and quality control, for which knowledge of pharmaceutical technology is considered essential. To work in this branch, the participants feel that bachelors must have a basic knowledge of the development and production of drugs, assessment of the stability and quality of a drug, and formulation technology. Practical skills are necessary, although one does not have to be able to execute all techniques. The bachelor must, however, have enough knowledge to be able to chose the right technique, and discuss the techniques with technicians and colleges. Biological pharmaceutical knowledge is considered less relevant. This is in contrast to the knowledge required for the other field of work within industry, the area of regulatory affairs and drug registration. In this area, exactly the combination of pharmaceutical technology and medical knowledge is of vital importance, while the practical implementation of pharmaceutical technology is less important.

The participants have corresponding expectations considering analytical chemistry and pharmacochemistry. While in a number of cases the practical knowledge of these techniques is considered essential (production in industry, hospital pharmacy), other participants only expect the bachelor to be able to use knowledge in these fields to interpret and evaluate existing cases (drug registration, community pharmacy).

Finally, some participants mention management skills to be of importance for a Bachelor of Pharmacy.

From these results one can conclude that the participants have specified expectations considering the knowledge of Bachelors of Pharmacy. These expectations are often related to the specific field of work.

Most participants agree on the fact that, to prepare bachelors for the job market, the learning of skills and related attitudes is just as important, or even more important, as the learning of knowledge (Table IV).

Skills	**I**	**CP**	**HP**	**R**	**O**	**T**
Communication						
- Presentation and speaking skills	6	5	1	2	1	15
- Presenting and writing in English	4			3		7
- Communication with the uninitiated		2		1		3
- Social skills, building a network		1		1		2
- Working in a team	2					2
- Providing information		1				1
- Ability to work cross-culturally	1					1
Organisation and management						
- Organisation, leadership, management skills, personnel policy	1	3	1		1	6
- Innovation management		1				1
Research						
- Conceptual flexibility, creativity	1	1		2		4
- Problem solving, analytical thinking		1			2	3
- Translation to the practice	1	2				3
- Practical application of pharmaceutical concepts	2					2
- Research cycle	1		1			2
- Information retrieval	1		1			2
- Process-oriented approach			1			1
Laboratory						
- Practical laboratory skills, work safe	1		1			2
- Accuracy, precision	1		1			2
Attitude						
- Science, ethics and society	1		1			2
- Independency				1		1

Table IV: Skills expected of Bachelors of Pharmacy by the job market.

Number of participants expecting a certain type of skill from Bachelors of Pharmacy. The table is divided into 5 categories representing different fields of work; I = Pharmaceutical Industry, CP = Community Pharmacy, HP = Hospital Pharmacy, R = Drug registration, O = Others (eg. health insurance, chemist), T = total

Skills mentioned in particular are communication and social skills. Some participants, especially from the community pharmacy, emphasize the importance of leadership and management skills. In industry and drug registration settings, mastering written and oral communication in English is expected.

Discussion

One of the main objectives of the Bologna Declaration is the introduction of undergraduate and postgraduate levels in all countries, with first degrees no shorter than 3 years and relevant to the job market (Confederation of EU Rectors' Conferences and the Association of European Universities (CRE) 2000, Bologna Secretariat 2007). However, despite the introduction of the bachelor (3 year) and master (1 – 3 year) system in the Netherlands and other European countries since 2001, the bachelor is still often looked at as preparing for a master programme. This is especially the case for Pharmacy education, as in almost all European countries, a full curriculum preparing for the profession of pharmacist is a 4 – 6 year curriculum, including a master phase. A Bachelor of Pharmacy is generally considered to be insufficient to work in the field of Pharmacy, as is expressed in the Lille 2008 document of the EAFP, were a minimum 5 year programme is considered essential to meet the current and future needs of professionals, the Higher Education standards in today's Europe, and the current state of knowledge in Pharmacy (European Association of Faculties of Pharmacy (EAFP) 2008). However, as the Bologna Declaration specifically states that a Bachelor Degree should be relevant for the job market, this exploratory study was performed to examine the employment possibilities for Bachelors of Pharmacy in the Netherlands. In addition, the expectations of the job market considering the knowledge and skills of Bachelors of Pharmacy were inventoried.

The main conclusion from this study is that the job market sees multiple employment possibilities for Bachelors of Pharmacy in the Netherlands. Especially within the field of drug registration and regulatory affairs, hospital pharmacy, pharmaceutical technology and PK/PD-modelling there is a potential need for Bachelors of Pharmacy. To prepare students for jobs within these work areas, a Bachelor of Pharmacy curriculum should pay attention to knowledge on pharmacotherapy, pharmacochemistry, pharmaceutical technology, analytical chemistry, general pharmacology and regulatory affairs. Furthermore, the job market expects sufficient communication and management skills.

There was a large variation in opinion between the participants about the employment possibilities for Bachelors of Pharmacy in the community pharmacy. Although some participants did see job opportunities, especially interviewees working in a

pharmacy chain, the majority of the subjects did not see any employment possibilities within the community pharmacies. An important reason is that, in contrast to the pharmacists and pharmacy assistants, in the Netherlands the bachelor would officially not be allowed to prepare and hand over drugs. Pharmacists therefore prefer the 'hands-on' experience of the trained pharmacy assistants. Another important argument of the participants was that, in contrast to the industry and hospital pharmacy, within the community pharmacy it would be hardly possible for a Bachelor of Pharmacy to develop a career pathway.

Currently, the Bachelor of Pharmacy curriculum at the University of Utrecht is largely based on pharmaceutical science, with some subjects only dealt with in depth in the Master of Pharmacy programme, such as pharmacotherapy and regulatory affairs, or underexposed at all, like pharmaceutical technology. The results of this study therefore warrant a change in the structure and contents of the both the Bachelor and the Master of Pharmacy curriculum, if the bachelor curriculum were to fulfil the expectations of the job market. Furthermore, the participants of this study often mentioned that the educational programme should pay more attention to practical problems of the daily pharmacy practice. A strong interaction between the job market and the university could improve this and make the Bachelor of Pharmacy curriculum more adjusted to the demands of the job market. However, it should be stressed that it is important that the academic level of Bachelors of Pharmacy is maintained, as it is the academic knowledge and skills that discriminates a Bachelor of Pharmacy from HBO bachelors like laboratory and pharmacy technicians.

At Utrecht University currently almost all students automatically move on from the Bachelor of Pharmacy to the Master of Pharmacy or another master programme. There are three main reasons for this, the first one being the general way of thinking in the Netherlands that a bachelor is preparing for a master. The second reason is the existence of the so-called 'continuation masters' in the Dutch Degree system; universities guarantee right of access for their 'own' bachelor graduates (Westerheijden, Cremonini et al. 2008). Finally, because of the fact that there is currently no tradition of bachelors entering the job market in the Netherlands, both the students as well as the employers are unfamiliar with the employability of Bachelors of Pharmacy. Therefore, to make a university bachelor relevant for the job market a reassessment of the assumptions about this degree is required (Westerheijden, Cremonini et al. 2008). Several factors will influence whether in the future Bachelors of Pharmacy will actually enter the job market. One important factor is the market force: as long as there are enough Masters of Pharmacy, they will be preferred by the employers above Bachelors of Pharmacy. However, considering the recent changes in legislation in the Netherlands (Ministerie van Volksgezondheid, Welzijn en Sport 2007), which make the pharmacist co-responsible for the treatment of patients, and oblige every pharmacy practice location to have a registered pharmacist present, a shortage of pharmacists and pharmacy assistants is expected by the participants. In a prognostic study on the job market for pharmacy assistants a cumulative shortage of 6480 pharmacy assistants is predicted for the year 2010 (De Grip, Hensen et al. 2003). This prediction includes the structural and incidental growth in the use of drugs and governmental measures considering the financial compensation of drugs for the patients. The shortage of pharmacy assistants will provide employment possibilities for Bachelors of Pharmacy. However, one should take into account that the situation could change when there is no shortage in the job market. The participants might have had a different opinion when this would be the case, making the prospect for Bachelors of Pharmacy quite different.

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