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Building Health Informatics Capacity - Educating the Workforce

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Abstract

The master program in health informatics at Aalborg University in Denmark has existed in more than 10 years and more than 140 students have graduated from the program at the time of the survey. A questionnaire survey was conducted to get an overview of the student's motives for entering the program, and get their opinion about being a student in the program, and what subjects they felt contributed to their further career. The survey also formed a basis for drawing job profiles. The majority of the graduates changed job once or more after graduation, but they stayed within health informatics. The survey has contributed substantially to the revision of the curriculum.

Keywords:

medical informatics, education, employment, career mobility

Introduction

The health informatics master's program at Aalborg University was started in 1994 and the first masters earned their degree in 1998. The main goal of the program is to enable the students to bridge the gap between health professionals and IT professionals.

To be admitted in the program the student must hold a masters degree or a B.Sc. in a health science and after three years of study the student has earned 90 ECTS points and will receive a Master's Degree in Health Informatics. The program consist of 26 ECTS of traditional course work and 64 ECTS of problem-based project work. The subjects in the courses are organized in four tracks: 1. Database theory, network theory and decision support. 2. System and context, demand/system specifications, user interaction. 3. Project management, assessment/ evaluation, and organizational change. 4. Methodologies for data acquisition, quantitative/qualitative analysis. The students gather four times a year at weekend workshops for intensive lectures, laboratory exercises and oral discussions. The rest of the time the backbone of communication is a conference system which runs on a server at the university [1,2].

In order to evaluate how the students contribute to the health informatics capacity, and to monitor how the program is able to prepare the students for their future job we have investigated the student's job situation after graduation. The survey was done in 2004 where 147 students had graduated from the program.

Method

A cover letter pointing to a web-based questionnaire containing 45 questions was sent to the 147 students who had graduated from the program. The questionnaires were analyzed anonymously. Descriptive statistics were applied to the standardized answers. There were very few free text answers which were summarized by the authors.

Results

The response rate was 69%. 80% of the students had more than 10 years of work experience when they entered the program. 70% of the students indicated that one of the reasons for entering the program was a desire for personal development. 58 % further indicated that they wanted to achieve a new job profile and 38% saw an opportunity to advance their career. 51% also indicated that they wanted to gain insight in the use of IT systems. Only 17% indicated that higher salary was a driving factor for entering the program.

Table 1 - Employment before and after graduation

Employment	Before	After	Migration
Hospital - clinic/laboratory	36	16	-20
Nursing school	11	11	0
Regional institution/administration	5	10	5
Hospital - administration	11	9	-2
University or research institution	3	8	5
Hardware/software industry	3	8	5
Hospital IT-department	10	7	-3
Other	7	6	-1
Ministry or government institution	1	4	3
Municipal institution	3	4	1
Other public institution	2	3	1
Other health informatics industry	0	2	2
Consultancy	1	2	1
Homecare	4	1	-3
Pharmaceutical industry	0	1	1
Own company	1	0	-1
Missing	3	9	6
total	101	101	

The students were also asked where they were employed before they entered the program and where they were

employed three month or more after graduation. The result is shown in table 1.

They were asked to describe their current work function on which they spend more than 10% of their time, and the result is shown in table 2. Each could choose one or more function.

Table 2 - Work function after graduation

57	Implementation of it-systems	13	Decision support
47	Education	13	Multimedia, internet, intranet
45	Project management	12	* for municipality health care/administration
40	Quality assurance	10	Telemedicin
35	Consultancy	8	Research and development
33	* for hospitals	7	* for education
29	Management/organisation	4	Medical imageanalysis
20	General administrative tasks	3	* for public health
13	* for primary care	3	Pervasive computing

* = Development/purchase of systems for ….

All the masters were employed or had set up their own business at the time of the survey. The raise in income after the job they had during their studies was significant.

At the question: "If you were in the situation to day when you entered the program would you then choose to study health informatics in this program again?" 77% responded yes, 7% says no and 16% were not quite settled in their view.

Discussion

Much has been written about various university graduate programs in health informatics, but only little has been written about the outcomes for the graduates of the programs. [3-6].

The dominant motivation for entering the program was the desire to achieve personal development. It is naturally very difficult to evaluate such an outcome, but comparing the very high satisfaction with the program in general, we assume that this goal has been achieved by the graduates. The second most common motivation was to achieve a new job profile. 58% of the graduates indicated this, and as 50 % had changed job one, two or three times since they graduated it is very likely that they achieved new job profiles. This is supported by the results regarding job migration.

In the contrary to the programs at Heidelberg University and University of Utah the majority (76%) of the graduates from Aalborg University work with health informatics after graduation and 92% remain within the health care sector. An immediate explanation is that nearly all the students at the point of entering the program already have a job in health care.

At Heidelberg University more than half of the graduates worked outside of medical informatics, which in their opinion underlined the quality of the informatics oriented part of education, because the medical informatics graduate can compete with those from general computer science. We find it rather supporting for the quality of our program that the graduates are able to find jobs within health informatics – the area in which they are specialized to function in and that they can contribute with high level knowledge about very complex problems.

Conclusion

The majority of the graduates from the master program in health informatics at Aalborg University participated in the survey of their background and motivation for entering the program, and which activities had contributed to their further career.

The majority of the students enter the program with a Bachelor degree in Nursing or Medical Laboratory Technology. They change their job once or more after graduation they migrate from employment in clinical settings to job in the administration, universities or research institutions and industry. None are unemployed, and they stay within health informatics working with implementation of it-systems, education, and project management. They were practically all very satisfied or very satisfied with their education, and they would choose the same program if they were in that situation to day.

The survey has been essential to the revision of the curriculum.

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