
WHY HEALTH STUDENTS CHOOSE WEB-BASED DISTANCE EDUCATION: EVIDENCE FROM PHARMACY EDUCATION IN NORTHERN SWEDEN

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Abstract

The classic model of undergraduate health professional education is based on on-campus studying, which limits access to education and possesses geographical barriers. There is a need for innovative ways to tackle the global shortage of health care professionals in rural areas. This study explored the motivating factors behind students' participation in distance education, specifically in web-based online format. Quantitative and qualitative data from a pharmacy alumni survey with 216 graduates was combined with qualitative data from a focus group study with 53 students. Both graduates and current students mentioned flexibility as their main motivational factor in choosing distance education. Flexibility was important for students and graduates as they can combine studies with work and family commitments. Compared to those who provided different reasons, graduates, who chose to study pharmacy because it was distance education, were on average older, married or in a de facto relationship and had dependent children. The results from this study support the Swedish government's aim and vision of lifelong learning which is becoming increasingly important to meet the requirements of the labour market for qualified health workers. Distance education could potentially address the shortages of these professionals in rural and remote areas by allowing flexible educational options.

Abstract in Sweden

De flesta grundutbildningar inom hälso- och sjukvårdsområdet är campusutbildningar, vilket kan begränsa tillgången till utbildning och medföra geografiska hinder för vissa personer. Det finns behov av innovativa sätt att hantera den globala bristen på hälso- och sjukvårdspersonal i glesbefolkade områden. Denna studie undersöker motivationsfaktorer till varför studenter väljer att läsa distansutbildningar i ett webbaserat format. Kvantitativ och kvalitativ data från en enkätstudie med 216 alumner kombinerades med kvalitativ data från en fokusgruppsstudie med 53 studenter. Både alumner och studenter angav flexibilitet som deras huvudsakliga motivationsfaktor för att välja en distansutbildning. Flexibilitet var viktigt för att kunna kombinera studier med arbete och familjeliv. De som valde att läsa farmaci eftersom det var en distansutbildning var i genomsnitt äldre, gifta eller sambo och hade minderåriga barn jämfört med de som angav andra anledningar för att välja samma utbildning. Resultaten från denna studie stödjer den svenska regeringens vision om livslångt lärande vilket blir alltmer viktigt för att kunna uppfylla arbetsmarknadens krav på kvalificerad hälso- och sjukvårdspersonal. Distansutbildningar skulle kunna möta bristen på dessa professioner i glesbefolkade områden, eftersom distansutbildningar ger flexibla utbildningsmöjligheter.

Keywords: Distance education, web-based, pharmacy, motivational factors, student characteristics

Introduction

To date the classic model of learning and teaching in undergraduate health professional education (including pharmacy) is based on full-time on-campus studying. However, this

model of delivery limits access to education and possess geographical barriers for those living in rural areas (Rifat, Josip, Azeem, & Erica, 2015). There is a need for innovative ways to tackle global shortage of health care professionals in rural areas, including increased access and availability of health professional education (Rifat et al., 2015). Web-based programs may provide a potential solution to shortages of health care professionals in rural areas such as Northern Sweden, where the shortage of pharmacists and other health professionals is notable (Nordström, 2004). Its format makes higher education more accessible and may overcome barriers such as geography and time (Nordström, 2004).

As a response to the shortages of pharmacists in rural areas, a 3-year Bachelor of Science in Pharmacy program (B.Sc. in pharmacy) by distance education was introduced at Umeå University in 2003 (Nordström, 2004). As second distance education program, the Master of Science in Pharmacy program (M.Sc. in pharmacy), started in 2012. Students can enrol in the 3-year bachelor's program and become a prescriptionist (*receptarie* in Swedish) or in a 5-year master's program and become a pharmacist (*apotekare* in Swedish). Prescriptionists work most often in community pharmacies, but are only authorised to work in pharmacies in Sweden, Norway and Finland. Pharmacists are authorised to work in The European Union and within a broader labour market e.g. pharmacy, pharmaceutical industry and research (Nordström, 2004; Sveriges Farmaceuter, 2013). Students with a bachelor degree can enrol in the postgraduate master's program (the last two years of the five year master's program) thereby obtaining a master's degree. The pharmacy programs at Umeå University are mainly web-based and education is mostly conducted through a virtual learning environment with regular meetings between students and teachers using a conference-software (Adobe Connect). Some limited mandatory face-to-face meetings occur in Umeå, for example for laboratory work (Nordström, 2004). Students from Sweden, Norway and Finland are allowed to apply to both programs. They need to be able to understand and speak Swedish as most course materials and exercises are conducted in Swedish. Umeå University accounts for the largest proportion of web-based distance learning pharmacy students in Sweden and it is the only university in Sweden, which provides the master's program via web-based online format.

Most studies to date on distance education for pharmacy and other health professions have focused on its effectiveness (Nesterowicz, Librowski, & Edelbring, 2014; Ruiz, Mintzer, & Leipzig, 2006; Salter, Karia, Sanfilippo, & Clifford, 2014) by comparing the delivery of education online versus face-to-face. Other studies have concentrated on students' satisfaction with online pharmacy courses (Amnéus, Lundh, Paulsson, & Westman, 2011; Moule, Ward, & Lockyer, 2010; Nesterowicz et al., 2014; Ruiz et al., 2006; Salter et al., 2014). It is unknown how many universities worldwide offer distance pharmacy education to pursue a bachelor's or master's degree (i.e. where most of the content and teaching occur using information and communication technology (ICT) tools). Furthermore, little is known about students' motivational factors for enrolling in programs offered in a web-based online format. The motivation to choose distance education can be divided into intrinsic and extrinsic factors. Intrinsic motivational factors refer to interest, engagement and enjoyment while extrinsic motivational factors refer to usefulness such as the desire for finding employment (Lee, Cheung, & Chen, 2005; Yoo, Han, & Huang, 2012). Hence the aim of this study was to explore the factors that motivate students to participate in distance pharmacy education, specifically in a web-based, online format.

Methodology

This study used a convergent exploratory mixed methods approach (Meissner, Creswell, Klassen, Plano, & Smith, 2011) using qualitative data from focus groups and qualitative and quantitative data from a survey (Figure 1).

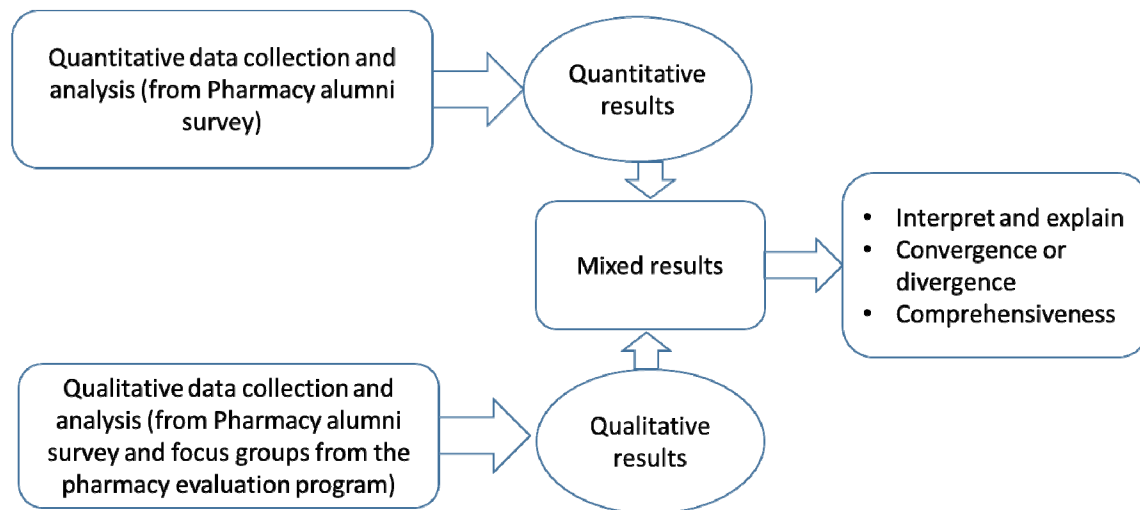


Figure 1. Convergent mixed method study design

Data sources

Data were collected using two different methods. The first set of data came from focus groups conducted by the Centre for Educational Development (UPL) at Umeå University with bachelor and master of pharmacy students from Umeå University. The aim was to examine pharmacy students' perspective on the programs and to find ways to improve the programs. To recruit participants a list of all students in the different study years in each of the programs was provided to UPL. Eight students were then randomly selected and invited to participate in the evaluation. If someone declined to participate, UPL sent an invitation to another student until they obtained 6-9 students per focus group. Detailed information about the program evaluation is provided elsewhere (Englund, 2015). Six focus group interviews were conducted with 53 students. The focus groups were facilitated by an experienced qualitative researcher at UPL. The focus group interview guide was made up by 12 open-ended questions about the pharmacy programs. For the present study, only the responses to students' motivation to choose distance education were included in the analysis.

The second data source was a pharmacy alumni survey conducted in 2015 alumni. The objective of this survey was to explore how students who had participated in the web-based Bachelor or Master's of Pharmaceutical Science Programs or both between 2003 and 2014 established themselves on the labour market, their career choices and their education and job satisfaction. The survey was divided into five sections: (a) employment characteristics, (b) job satisfaction, (c) satisfaction with the education (including a question about their motivation to study pharmacy at Umeå University), (d) demographics and (e) an open-ended question asking for further general comments. From the 511 invited graduates, 222 had participated in the survey. The following data were included into the present study: gender, marital status, age, dependent children, country of birth, region where they live, employment status, current employment, pharmacy degree and year of graduation as well as the open ended question "Why did you choose to study pharmacy at Umeå University?", that 216 participants had answered, so the present study includes data from 216 graduates.

Data analysis

Quantitative data analysis

Descriptive statistics were used to categorize the survey participants' demographic information and to summarise the data. To test the associations, a chi-square (χ^2) test or Fischer's exact test (where appropriate) was conducted. Significance was set at the five per cent level. Analysis was performed in Microsoft Excel version 2010.

Qualitative data analysis

Qualitative data from the focus groups were analysed using thematic analysis (Braun & Clarke, 2006). All qualitative data from both sources (focus group and open-ended question from the survey) were read and translated into English. Thereafter, the translated quotes were re-read and notes were made to identify similarities and differences. This was repeated until all quotes were assigned to categories. Codes were then created to identify common ideas. From these codes, a coding framework was developed and refined (Braun & Clarke, 2006; O’Cathain & Thomas, 2004). Codes were labelled and grouped into themes and subthemes. All data were initially coded by (EE), coded again by (GG) and back translated to Swedish by another researcher.

Results

Qualitative – Focus groups and open-ended question from the survey

The focus groups and open-ended question from the graduate survey drew out four different themes related to students’ motivational factors to choose distance education. Quotes have been used to illustrate the themes. Table 1 describes the themes and subthemes.

Table 1: Overview of the main themes that emerged

Themes	Subthemes	Example
Flexibility	Family situation	“Distance education with meetings in my hometown, which made it easier to study since I had small children.” [Graduate]
	Work alongside	“When studying by distance you can continue working alongside...” [Bachelor level, third year]
Place	Home	“... I didn’t want to move with my family.” [Graduate]
	Location	“I couldn’t move. Otherwise I rather had studied on campus.” [Bachelor level, first year]
Previous educational experience	Positive	“I’m used to study by distance and I like it.” [Bachelor level, first year]
	Negative	“I chose distance education because I studied on campus before and it took so much time to travel. I think it is easier to organize your time and you are very flexible when studying by distance.” [Bachelor level, third year]
Only option (only program)		“Because the postgraduate program only existed in Umeå.” [Master level, first year]
Other		“I was not admitted to the veterinary program in (name of the city).” [Graduate]

Flexibility

The majority of students and graduates mentioned flexibility as their main motivational factor. Students described how the format allows them to study at their “own pace” and organize their time. As noted by this student:

“You can organize your time by your own. You only have the mandatory meetings in Umeå, but this isn’t very often at all. It’s great, you have the possibility not to study one day if you don’t want to and then study on the weekend instead. You can plan your time exactly like you want. That’s positive.” [Bachelor level, first year]

Flexibility was important for both students and graduates for several reasons: they could work and study at the same time as exemplified by this quote:

"The web-based format was perfect for me, because I could combine it with my last job". [Graduate]

For others, flexibility is important because of family commitments. Most reported that they have children and needed a "flexible" education option. As noted by this student:

"I have children at different ages and I'm able to organize my time to be flexible, so it is suitable." [Bachelor level, first year]

And this graduate described:

"Because of distance education! I was a single parent with two children and it was a good opportunity to study by distance although I live in Southern Sweden." [Graduate]

Place

Students and graduates described the importance of place in their decision to choose distance education. Place took two forms: home and location. The majority of students mentioned that they chose distance education, because they did not want to move away from "home". Others did not have the possibility to move and chose distance education as the only option that allowed them to study without the need to move. One mentioned:

"Because I have children and family at another place it would be stupid to move. I mean it's only three years. So, I wouldn't take the kids away from here" [Bachelor level, first year]

However, family situation as a motivational factor for choosing distance education did not always imply children. For some being close to family members, such as parents or partner was also important.

Previous educational experience

For some students and graduates, the decision to study by distance was influenced by experiences from previous education. Most of those who described this as an important factor had a positive experience with distance education and therefore decided to choose distance education again. One student mentioned:

"I have studied before and I appreciate the flexibility in distance education." [Bachelor level, third year]

In contrast, others chose distance education after they had a negative experience with face-to-face campus learning. One student noted:

"I studied in [name of the city] before and this was not very positive. Actually I have difficulties to stay focused on teaching lectures..." [Bachelor level, second year]

Only option

For some students, Umeå was the only option. As previously mentioned this is the only university that offers the postgraduate master's program. For others, it was the only option since the pharmacy degree was not offered close to where they live.

“The program doesn’t exist in my hometown and it wasn’t possible to move or travel to [name of the city] several hours each day...” [Bachelor level, third year]

Other reasons

Students who already lived in Umeå described that enrolling into the pharmacy program was convenient since it was the same town as where they lived. These tend to be younger students. Another reason for choosing a pharmacy distance program was what respondents described as “favourable labour market”. Several graduates thought that it would be easier to get a job after completing their degree.

“Because the thought had been with me for a long while and I wanted a real job and “they” said that there was a shortage of prescriptionists.”
[Graduate]

While the data from the students’ focus groups interviews and the open-ended question from the survey provided information about the reasons why students chose pharmacy distance learning it did not allow exploring how these are influenced by other personal characteristics or trends over time.

Quantitative – Pharmacy alumni survey

Participants’ characteristics

The characteristics of the graduates are shown in Table 2. The majority were female (95%), Swedish born (79%) and in a married or de facto relationship (86%). Over one third (39%) were aged between 41 and 50 years. Seventy two percent of respondents were employed in full time positions and 84% worked in community pharmacies.

As Sweden has an unequal population density, we divided Sweden into north and south, which is illustrated in Figure 2. About 88% of Sweden’s population lives in Southern Sweden (Statistics Sweden, 2016).

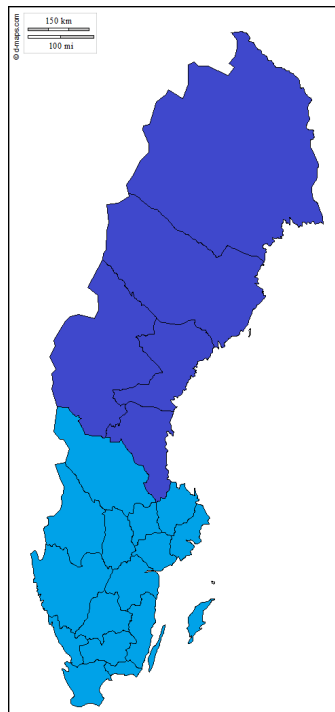


Figure 2. Map of Sweden divided into Northern Sweden and Southern Sweden (adapted from D-maps (2016)).

Table 2: Characteristics of graduates

Participants characteristics		n	%
Gender (n = 216)	Female	205	94.91
Marital status (n = 216)	Married/partner	186	86.11
	Single/divorced	30	13.89
Age (n = 214)	< 30	31	14.49
	30 - 40	76	35.51
	41 - 50	83	38.79
	> 50	24	11.21
Dependent children (n = 216)	No	109	50.46
Country of birth (n = 212)	Sweden	167	78.77
	Norway	17	8.02
	Other countries	28	13.21
Region (n = 216)	Southern Sweden	96	44.44
	Northern Sweden	101	46.76
	Norway	19	9.79
Employment status (n = 215)	Full-time	154	71.63
	Part-time	41	19.07
	Job seeking	2	0.93
	Studying	2	0.93
	Parental leave	11	5.11
	Others#	5	2.33
Current employment (n = 211)	Community pharmacy	178	84.36
	Hospital pharmacy	5	2.37
	Pharmaceutical company	6	2.84
	County council	5	2.37
	Drug product manufacturing	2	0.95
	Dose dispensing pharmacy	3	1.42
	University	2	0.95
	Municipality	4	1.90
	Others*	6	2.84
Degree (n = 216)	Bachelor of Science in Pharmacy	195	90.28
	Master of Science in Pharmacy	12	5.56
	Bachelor + Master of Science in Pharmacy	9	4.17
Year of graduation (n = 211)	2006 - 2010	115	54.50
	2011 - 2014	95	45.02

Others# include: Self-employed, traineeship. Others* include: international clinical testing, medical technology, goods control at head office, teaching pharmaceutical technicians in training, various work places. Other countries include: Japan, Chile, Kurdistan, Thailand, Czech, Montenegro, Somalia, Armenia, Iraq, Bosnia, Syria, Finland, Spain, Iran, Philippines.

Motivational factors (quantitative analysis)

From the answers to the open-ended question "Why did you choose to study pharmacy at Umeå University?" 14 categories were coded and used for further quantitative analysis. To determine if there was a difference between the group of graduates that chose to study pharmacy at Umeå University because it was distance education and the group who had other motivational factors such as interest, job and further education, two groups were created (0 = other, 1 = distance). Compared to graduates that had other motivational factors, those who chose to study pharmacy at Umeå University since it was distance education were on average older, more likely to be female and in a relationship, have dependent children and be Swedish born.

To further explore if differences amongst these groups were statistically significant the groups were dichotomised based on their characteristics such as region where they live (north vs. south), year of graduation (2006 – 2010 vs. 2011 – 2014) or having or not having dependent children (Table 3). Graduates who chose to study pharmacy at Umeå University because it was distance education were more likely to live in Southern Sweden. The

difference amongst the groups was statistically significant ($\chi^2 = 8.7689$, $df = 1$, $p < 0.005$). There were no differences based on the cohort of graduation year and having dependent children. However, within the group who chose to study pharmacy at Umeå University because it was distance education there were more graduates who reported having dependent children (Table 3).

Table 3: Predictors of graduates' motivational factors

	Motivational factor		Chi- square*	p- value
	Distance, n (%)	Other, n (%)		
Year of graduation			0.3627	0.547
2006-2010	72 (57.14)	45 (52.94)		
2011-2014	54 (42.86)	40 (47.06)		
Dependent children			2.0004	0.157
Yes	69 (53.49)	38 (43.68)		
No	60 (46.51)	49 (56.32)		
Region			8.7689	0.003
Northern Sweden	53 (43.09)	48 (64.86)		
Southern Sweden	70 (56.91)	26 (35.14)		

*d.f=1

Discussion

This study explored the factors that motivate students to choose pharmacy distance education, specifically in a web-based online format. Not surprisingly, both students and graduates in our study described that flexibility is the most important motivational factor for choosing distance education, specifically in a web-based online format such as the one offered at Umeå University. These results are consistent with findings from research studies in other disciplines (Delaney, 2015; Mahieu & Wolming, 2013; Söderström, From, Löfvqvist, & Törnquist, 2012) but also in other health professions such as occupational therapy and nursing (Townsend et al., 2007). Similar to our study results, research has also shown that distance students are on average older than on-campus students, more likely to be females and have family commitments (Delaney, 2015; Mahieu & Wolming, 2013; Nordström, 2004; Statskontoret, 2013; Townsend et al., 2007). Distance education fulfils an important role for older students, students with family and/or children, those who want to keep working and those living in rural communities. These students need more flexible educational options. Distance learning enables education to a wider range of people, because there is no need to move or travel providing access to people who otherwise would have not been able to pursue studies (Delaney, 2015; Mahieu & Wolming, 2013). This is particularly important in highly feminized health professions such as pharmacy (Statskontoret, 2013). As several students and graduates with children mentioned, distance education was the only education format that allowed them to balance the time demands of education, family and work. Hence as highlighted in the World Health Organization report this form of education delivery may improve access to and availability of health professional education. It may potentially help address the mal-distribution of health professionals by providing flexible education opportunities (Rifat et al., 2015).

Personal circumstances, complex scheduling and geographical constraints have been described as barriers to traditional classroom education (Delaney, 2015; Mahieu & Wolming, 2013; Söderström et al., 2012; Townsend et al., 2007). Research has also shown that costs associated with travelling or having to live away from home while studying, are significant barriers to accessing full-time higher education (Cullinan, Flannery, Walsh, & McCoy, 2013). Both students and graduates mentioned how important it was to be able to work and study at the same time. In a study by Townsend et al, exploring accessibility and interactivity in distance education programs for health professions, 88% of the respondents described that they chose the distance program as it enabled them to study as well as to work full time (Townsend et al., 2007).

One interesting finding was that some graduates reported that pharmacy distance education allowed them to change profession or pursue further studies (for example to complete a master's degree). The possibility to participate in distance education gives people the opportunity for a career change (Salter et al., 2014) but it also offers them the opportunity to upskill. As previously mentioned, in Sweden, Norway and Finland there are two different professional degrees: dispensing pharmacists (prescriptionists, 3-year education at university) and pharmacist (5-year education)). Prescriptionists work most often in community pharmacies, but they are only authorized to work in pharmacies in Sweden, Norway and Finland. Pharmacists are authorized to work in the European Union and on a broader labour market e.g. pharmacy, pharmaceutical industry and research (Nordström, 2004; Sveriges Farmaceuter, 2013). Due to the characteristics of the pharmacy workforce in Sweden, Norway and Finland, the program available at Umeå University allow prescriptionists to upskill by completing a two-year master's program. This program is currently only offered as a full-time program but most students who are working full or part time are in fact studying part-time. Although registered as full-time students, they are only partly active which in turn results in a prolonged time to complete their degree (e.g. three to four years instead of two years). Offering the postgraduate pharmacy program (and also the other pharmacy programs) as part-time programs could counteract this problem. It is also important to inform the students prior to enrolment about the expectations and workload when engaging in full time studies giving the students the possibility to balance their work and study load.

Some researchers argue that health students may not be able to develop certain important skills such as communication and professionalism when studying online. In a review of trends in pharmacy education, Blouin et al described how "professional socialization" may not be possible via distance education and argued that face-to-face encounters provide a higher degree of interaction (Blouin et al., 2009). However, in a study of a nursing distance education course, the researchers found that socialization of students in the distance based program is comparable to those in a traditional format as long as online students also have experiences in the patient care setting under the supervision of a practitioner (Nesler, Hanner, Melburg, & McGowan, 2001). In an evaluation of a German distance education course that combined lectures for self-study with weekend-seminars aiming the upskilling of health professions (mainly nurses) on psychological health promotion, it was shown that the participants of the course gained knowledge and skills that were useful for their daily work with patients and their family members (Bernath & Fichten, 2007). Bernath and Fichten also reported on an evaluation of non-degree networked nurses-training programme provided in the same format (combined lectures for self-study with weekend-seminars). Overall results from eight universities were highly positive (Bernath & Fichten, 1999). It is important to highlight that unlike Umeå University these are non-degree programmes and these courses require attendance to weekend seminars. Most teaching at Umeå University is provided in a web-based format.

The results also highlight that students/graduates are not a homogenous group, for example younger students living in Umeå may like online learning because they are used to and grew up with the technology. For these students distance education, specifically in a web-based online format may be more appealing. Further research should focus on exploring course satisfaction among pharmacists and pharmacy students in distance education compared to traditional educational methods and well as their knowledge and skills.

Strengths and limitations

One of the limitations was that the alumni survey asked graduates about their current situation such as the region where they "currently live" and if they had dependent children. It was assumed that graduates stayed in the region after they completed their studies and that their children may still be of dependent age. Secondly, the data were collected from two different populations (students and graduates). The student data were mainly gathered to improve the pharmacy programs and hence no further probing was done regarding their

motivations. However, it was important to explore both viewpoints, as graduates may be able to reflect back on the choices made. It is also important to make the most of data that have already been collected. The combination of data from different sources is one of the strengths of the study. While demographic data from the survey allowed us to understand the characteristics of the students that chose the web-based format, qualitative data from the survey and the focus groups allowed us to understand the motivational factors behind those decisions. Combining both allowed us to explore trends, potential differences and test for assumptions made about the characteristics of distance education students.

Conclusion

The main factor associated with pharmacy students' and graduates' decision to choose distance education, specifically in a web-based online format, is the need for flexibility. As people who chose these programs are on average older and more likely to have family and live far away from the university, they want to have the opportunity to combine their studies with family, job and other life commitments. The results from this study support the Swedish government's aim and vision of "lifelong learning" which is becoming increasingly important to meet the requirements of the labour market for qualified health workers. Web-based distance education could potentially address the shortages of these professionals in rural and remote areas by allowing flexible educational options.

Ethics and conflicts of interests

All data were de-identified before analysis. Study participants (graduates and students) were informed about de-identification of the material and about the aim of the study and also consented to the data being used for research purposes. The authors have no conflict of interest. According to the Act in Swedish law concerning Ethical Review of Research involving Humans (SFS 2003:460) from the Ministry of Education and Cultural Affairs, the present study required no ethical approval.

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