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Research Article

The Influence of a Tuition Fee Increase on the Drop-out Rate of the Nursing Program

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ABSTRACT

The aim of the study is to further delve into the question of whether an increase in tuition fee could have a significant impact on the positive outcome of the sacrifice-for-gain assessment among Nursing students. We used an SPSS17.0 to analyze data from an anonymous survey of 160 Nursing students from March of 2016. The results show that the majority of students consider the current tuition fee to be "too high". An increase in excess of 30% of the tuition fee would lead to a drop of 68.8% or more in the percentage of students willing to continue their education. In order to determine the impact of a tuition fee increase on the respondents' decision to drop out, three models were tested: 1) the drop-out rate is linearly dependent only on the degree of the tuition fee increase; 2) the drop-out rate depends on multiple factors such as tuition fee increase, year of study, and intrinsic motivational factors; and 3) the drop-out rate depends on intrinsic motivational factors. The models without the variable tuition fee have more predictive power. The study found that only 4% of the drop-out decision is motivated by a potential increase in tuition fee.

Keywords: Graduates, labor market, nursing program, nursing students, tuition fee

1. Introduction

The higher education system of Bulgaria is based on the belief in free tertiary education for qualified students, with the main supportive argument being the great return that educated citizens make to their society. The constitution guarantees all Bulgarians the fundamental right to education. Prior to the fall of communism in 1989, university programs were free for all admitted applicants. With the transition to democratic governance and a free market economy, came a drastic shift to a tuition fee-driven education system. While at first only a few universities charged their tuition fees, the number of paid university programs gradually increased until free university education had virtually disappeared by the beginning of the new millennium (Ilieva-Trichkova, 2013; Stoilova, 2015; Boyadjieva, 2010; Stoilova, 2010).

Currently there is no uniform tuition fee rate in Bulgaria: tuition fees vary according to the selected program and the preferred university, and depending on whether one is entitled to state subsidy. If an applicant qualifies for admission as a "state sponsored" student, then he/she covers only a small fraction of the cost of their studies. If an applicant is admitted as a "paying" student, then he/she has to cover the full cost (Higher Education Act, 2016).

Many researchers have shown that the introduction of a tuition fee (as well as its amount) influences the behavior of future students. In Germany, since the shift from a free education to a tuition-based one began at the turn of the XX c., such research has proliferated (Dwenger, at al., 2012). The study conducted by Hübner (2009b) evaluates the introduction of tuition fees focusing on the effects of tuition fees on enrollment decisions. Hübner finds that the introduction of tuition fees in some federal states has reduced the probability of enrollment by 2.74%.

The Center on Budget and Policy Priorities (CBPP) in the USA periodically publishes empirical data about tuition fees in the USA and discusses their effects on students' behavior. According to the data presented in the latest CBPP's report, tuition fees in the USA vary significantly across states and between universities (Mitchell, at al., 2016). Universities that cannot afford not to increase their tuition fees tend to witness a decline in interest of prospective students, whereas universities that succeed in keeping their fees at a stable level (by reducing some of their expenditures), tend to become more attractive for students. This tendency appears to hold especially true for lower-income students.

In addition, tuition increases may be pushing lower-income students towards less-selective public institutions, which in turn is likely to cause a reduction in their future earnings due to the correlation between education and earnings. Perhaps just as important as a student's decision to pursue a postsecondary degree, is the choice of which higher education institution to attend. Researchers have demonstrated that lower-income students are often forced by financial constraints to narrow their list of schools to apply to and, finally, enroll in an institution that is not highly selective (Mitchell, at al., 2019).

In Bulgaria, just like in all EU countries, the Nursing profession is a governmentally regulated profession. Thus there are certain state rules and regulations that need to be satisfied by university programs in Nursing. The prescribed course of study is full-time: it takes 4 academic years and 4600 course hours including clinical and theoretical instruction. The theoretical instruction consists of core curriculum courses, curriculum-supplement courses, and electives, delivered in the form of lectures, seminars, practical exercises, and independent work, distributed over no fewer than 7 semesters. The clinical instruction includes clinical practice and clerkship prior to graduation under the guidance of qualified specialists (Ordinance on the Unified State Requirements for Higher Education in the "Nursing" and "Midwifery" special-

ties for Bachelor's degree, 2010). Hence the minimum number of semesters that a Nursing student has to pay tuition fee for is seven.

In recent years, there has been a decline in interest in the nursing profession which has had a negative impact on the number of applicants to Nursing programs. According to official, unpublished data for internal use from the recruitment campaign of Medical University – Plovdiv (2015), in the Fall semester of 2015, there were 130 applicants while the state was to subsidize 90 admitted students. The ratio between applicants and admitted students was 1:1.4, thus almost all applicants had a good chance of being admitted. The admission criteria are lowered consecutively, and even applicants that may lack the necessary high level of motivation could get admitted. As the Medical University – Plovdiv (2015) statistical data shows, during the period from 2008 to 2013, less than 60% of all freshmen successfully graduated from the Nursing program. Since the reasons for Medical University – Plovdiv student drop-out have yet to be definitively elucidated by academic research, it is hard to pinpoint the exact factors at play. Tuition fees of Healthcare programs are typically more expensive than those of programs in other fields due to the greater costs incurred not only in connection with personnel expenses (salaries paid to attract qualified medical practitioners as lectors), but with high-tech equipment expenses (elevated initial purchasing costs and maintenance fees) as well. Even when the state covers part of the tuition fee (which is true only for *state-sponsored* students), students pay more to pursue a Healthcare degree than a degree in most other fields (Council of Ministers of the Republic of Bulgaria, 2020). Still, even though financial causes are often the first ones to be pointed out, the moderate tuition fee increase of 5.5% for the examined period does not lend itself to being identified as the sole leading factor for the high drop-out rate. In our previous study, we demonstrated the existence of a breaking point, i.e. a level of tuition fee beyond which students are unwilling to continue their studies (Stoyanova & Goranova, 2018).

The aim of the present study is to check if an increase in tuition fees could justly be identified as the sole leading trigger of the high drop-out rate. To this end we have prepared two models: one that takes into account only the rise in tuition fee, and one that contextualizes this increase and examines it along with other motivating factors.

2. Materials and Methods

In March of 2016, anonymous original questionnaires were filled out by Nursing students in their 1st, 2nd, and 3rd year of study at Medical University – Plovdiv. One hundred and sixty respondents took part, which represents 75% of the statistical population (214 Nursing students). The questionnaire asked for information about the social and economic state of the respondents. There were two open questions about the students' age and the amount of tuition fee they had to pay (since this amount varies in accordance with the year they initiated their course of study, it also depends on whether a student is state-sponsored or not). Also included were 10 questions that asked students to evaluate on the scale of 1 to 5 (from "I agree completely" to "I disagree completely") their choice and satisfaction with the decision to study Nursing. These questions were elaborated especially for the purposes of internal studies at our university and were arrived at as a result from brainstorming sessions with a focus group of 7-9 students and secondary information from numerous studies such as Neill (2009), Hübner (2012), Padlee at al. (2010), and Denny (2014).

Furthermore, in order to establish the threshold of acceptability of a tuition fee increase, we asked respondents "What percentage of tuition fee increase would cause you to leave the program?". The students had to select the lowest percentage (given in 10-percent increments) that would result in them dropping out.

The study was organized in two stages.

In the first stage, a pilot survey was conducted among 20 Nursing students to assess the reliability and validity of the prepared tools before the main study. Following an instruction briefing, the participants in the pilot survey filled out the questionnaire twice over two weeks. In the process of filling out the questionnaire for the second time, participants had no access to the original completed forms. To evaluate reliability, we used the split-half-reliability model and calculated the Spearman-Brown coefficient (rsb) for each item. The obtained high values for rsb (> 0.6) and Cronbach's α for the whole panel (0.891) show that the questionnaire has a very good reliability.

In the second stage the main study was performed. With the help of descriptive statistics, we determined the thresholds of acceptability of a tuition fee increase. Then a factor analysis was applied with the purpose of determining the correlations between the items regarding major choice motivation. This is a data reduction technique that can help determine a smaller number of underlying dimensions of a large set of inter-correlated variables. Factor analysis with varimax rotation was used to determine the underlying dimensions of 10 motivating factors. All factors with eigenvalues or latent roots of 1.0 or greater were considered significant and reported. Items were removed if factor loadings were less than 0.40 (Hair, at al., 1998). However, in this study, only items with factor loadings of 0.5 and above were taken based on Nunnally (1978).

Finally, a regression analysis was applied in order to determine the factors that influence the decision of students to leave the program, with a focus on tuition fee increase. Regression analysis is an established statistical technique for determining the relationship between a single dependent variable and one or more independent variables (Sen & Srivastava, 1990). The dependent variable in this study was the students' decision to leave the Nursing program. The independent variables were the tuition fee, year of study, and intrinsic motivational factors. The analysis yields a predicted value for the criterion resulting from a linear combination of the predictors (Palmer & O'connell, 2009) and was used in similar studies, conducted by Neill (2009), Hübner (2012), and Denny (2014).

To analyze the collected data, we used SPSS 17.0 and Windows Excel, and relied on descriptive, factorial, regression, and correlation analysis.

3. Results

The mean age of the respondents was 23.58 ±6,459. There were 41.2% (n=66) 1st year, 33.8% (n=54) 2nd year, and 25.0% (n=40) 3rd year students. We found out that all respondents enjoy state-subsidized tuition fee, which amounts to about 200 euro (93.5% of the minimal Bulgarian salary in 2016). A significant number of the students, 53.1% (n=85), believe that even now this tuition fee is too high, having in mind the standard of living in the country; 23.8% (n=38) cannot determine if it is so, whereas 23.1% (n=37) consider their tuition fee "acceptable". If their tuition fee is incremented by 30%, the greater part of the students, 68.8% (n=110), will leave the university. The answers can be grouped according to the year of study of the respondents (see table 1.)

Our nonparametric analysis did not find significant statistical differences in the type of answers, based on the year of study of the respondents. A tuition fee increase of 30% or more would serve as a deterrent even to 3rd year-students, who are about to complete their course of study. As could be expected, the respondents who believe that their tuition fee is already high, have a lower threshold of tuition fee increase tolerance (C=0.470; P = 0.00).

Typical of all students in the field of Medicine, including nursing students, is the very limited or practically non-existent possibility for them to work while pursuing a full course of studies. Hence students are not financially independent, and rely on financial assistance from their parents.

Table 1: Distribution of students' answers

Year of study	1st		2nd		3rd		Total	
At what percentage of tuition fee increase would you cease studying?	**n**	**%**	**n**	**%**	**n**	**%**	**n**	**%**
≤10%	17	25.8	15	27.8	11	27.5	43	26.9
≤20%	16	24.2	14	25.9	5	12.5	35	21.9
≤30%	14	21.2	13	24.1	5	12.5	32	20.0
≤40%	5	7.6	2	3.7	2	5.0	9	5.6
≤50%	11	16.7	6	11.1	9	22.5	26	16.2
≤60%	0	0.0	2	3.7	0	0.0	2	1.2
≤80%	1	1.5	0	0.0	1	2.5	2	1.2
≤100%	2	3.0	2	3.7	7	17.5	11	6.9

Our results completely concur with the above observation. Parents cover all tuition fee and fees of 73.8% (n=118) of the respondents. 17.5% (n=28) of them declare themselves to be financially self-sufficient, while 8.8% (n=14) both work and receive financial assistance from their parents. The greatest share is those students who live with their parents: 31.9% (n=51), followed by those who reside in student housing: 31.3% (n=50). The students who have an apartment of their own represent 19.4% (n=31), and 17.5% (n=28) rent an off-campus apartment. It is important to note that neither the source of income during the course of studies, nor the type of housing, influences the critical level of tuition fee raise ($P>0.05$), i.e. the breaking point at which students give up studying.

The decision to drop out of a given university program typically depends on various factors, prominent among them being the ones that have to do with a student's intrinsic motivation to pursue the major in question. In our initial sessions with groups (of 7 to 9 students each), we relied on brainstorming to deduce the main motivating factors. Table 2 shows the distribution of the answers of all participants in the study. They had to evaluate the influence of each of the given factors.

Table 2: Students' motivating factors

Motivating factors	I agree completely	I disagree	I do not disagree, but I do not agree either	I agree	I agree completely
	n, (%)	*n, (%)*	*n, (%)*	*n, (%)*	*n, (%)*
Q1 There is a deficit of professionals which will guarantee me employment in the future.	7 (4.4)	7 (4.4)	21 (13.1)	58 (36.3)	67 (41.9)
Q2 My diploma is recognized in the EU which will allow me to work abroad for a higher salary.	11 (6.9)	10 (6.3)	22 (13.8)	52 (32.5)	65 (40.6)
Q3 The profession is a very prestigious one.	9 (5.6)	13 (8.1)	53 (33.1)	42 (26.3)	43 (26.9)
Q4 This is my childhood dream.	34 (21.3)	17 (10.6)	47 (29.4)	39 (24.4)	23 (14.4)
Q5 There is no great competition among applicants.	39 (24.4)	34 (21.3)	47 (29.4)	29 (18.1)	11 (6.9)
Q6 The university is situated close to my parents' (relatives') home so I can live there (I do not have to pay rent and my commuting expenses are low).	62 (38.8)	24 (16.9)	40 (25.0)	16 (10.0)	15 (9.4)
Q7 My parents influenced my decision.	87 (54.4)	33 (20.6)	22 (13.8)	13 (8.1)	5 (3.1)
Q8 The tuition fee per semester is relatively low.	54 (33.8)	48 (30.0)	50 (31.3)	3 (1.9)	5 (3.1)
Q9 The quality of the theoretical studies of my desired major at this university is very high.	11 (6.9)	14 (8.8)	52 (32.5)	68 (42.5)	15 (9.4)
Q10 The quality of the practical studies (the clerkship) of my desired major at this university is very high.	8 (5.0)	33 (20.6)	37 (23.1)	64 (40.0)	18 (11.3)

In order to highlight the main motivating factors and reduce their number, we performed a factor analysis following the Principle Component Method. Items with a factor weight of less than 0.5 were left out. The rest of the items underwent a Varimax rotation in order to increase their factor weight at the expense of the removed items. In this way the observed variable could be better assessed using a minimum number of leading factors.

The results of our analysis showed that student motivation to enroll in this particular university program depends on four types of factors, which account for 59.30% of the studies variable. Thus, a model with four factors should be adequate and the analysis can be considered satisfactory since they do not exceed 60 percent of the explained variance recommended in social sciences (Hair, et al., 1998).

The motivating factors are interconnected, and have been grouped in the following way: F1 – Social and economic determinants, F2 – Quality of education, F3 – Market situation in the country, F4 – Opportunity to work abroad (see Table 3). Having a factor weight of 0.408, Q4 was left out of the analysis. The Kaiser-Meyer-Olkin (KMO) test showed 0.601 (i.e. >0.5), while the Bartlett's test of sphericity was Sig.=0.00, which demonstrates the suitability of our factor analysis.

In order to determine the degree of influence of a tuition fee increase on the respondents' decision to drop out, we tested a couple of models:

Table 3: Types of motivating factors

Motivating factors	F_1 Social and economic determinants	F_2 Quality of education	F_3 Market situation in the country	F_4 Opportunity to work abroad
Q6	0.742			
Q3	0.653			
Q8	0.647			
Q9		0.872		
Q10		0.700		
Q5			0.762	
Q7			0.624	
Q1			0.593	
Q2				0.878
% of Variance after Rotation: Varimax with Kaiser Normalization	16.57%	16.12%	14.95%	11.66%

1st. The decision to drop out is linearly dependent only on the degree of the tuition fee increase:

$$D=b0+b1Ti \quad (1)$$

D – Drop-out decision

T_i – Degree of tuition fee increase

and

2nd. The decision to drop out depends on multiple factors such as tuition fee increase, year of study, and intrinsic motivational factors:

$$D =b0+b1Ti +b2F1+b3F2+b4F3+b5F4+b6G \quad (2)$$

G- Year of study

Model 1: Results

The results of the regression analysis have shown that the model is statistically significant, Sig.= 0.011, albeit with a very low determinant coefficient, R^2=0.04: an increase of tuition fee accounts for only 4% of the drop-out decision which clearly points to the existence of other factors at play. The corresponding regression coefficients are given in Table 4.

Table 4: Findings of the regression analysis of students' drop-out decision as a result of a tuition fee increase

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		Beta	Std. Error	Beta		
1	(Constant)	.261	.048		5.444	.000
	Tuition fee increased	-.031	.012	-.200	-2.571	.011

Model 2: Results

The results of the regression analysis have shown the second model as statistically significant as well, Sig.= 0.000, having a much higher determinant coefficient, R^2=0.211. The corresponding regression coefficients are given in Table 5.

Table 5: Findings of the regression analysis of students' drop-out decision as a result of multiple factors

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		Beta	Std. Error	Beta		
2	(Constant)	.177	.072		2.476	.014
	Year	.027	.034	.057	.778	.438
	Tuition fee increased	-.020	.012	-.129	-1.717	.088
	F1	-.058	.027	-.157	-2.142	.034
	F2	-.125	.027	-.339	-4.685	.000
	F3	.068	.027	.183	2.537	.012
	F4	.004	.027	.012	.165	.869

F_1- Social and economic determinants; F_2 - Quality of education; F_3 - Market situation in the country; F_4 - Opportunity to work abroad

As shown in Table 5, the regression coefficients of the independent variables "year of study", "degree of the tuition fee increase", and F4 are statistically negligible, hence these variables have to be left out of the model. Thus we arrive at the following new model:

$$D = b0 + b2F1 + b3F2 + b4F3 \quad (3)$$

Model 3: Results

This third model is statistically significant, Sig.= 0.000, and has a negligibly lower determinant coefficient, R^2=0.194. The corresponding regression coefficients are given in Table 6.

Table 6: Findings of the regression analysis of students' drop-out decision as a result of the factors of Social and economic determinants, Quality of education, and Market situation in the country

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		Beta	Std. Error	Beta		
3	(Constant)	.177	.072		2.476	.014
	F1	-.058	.027	-.157	-2.142	.034
	F2	-.125	.027	-.339	-4.685	.000
	F3	.068	.027	.183	2.537	.012

F_1 - Social and economic determinants; F_2 - Quality of education; F_3 - Market situation in the country

4. Discussion

There has been a lot of criticism of tuition fee-based education systems, and, in particular, of the incessant rise of tuition fee worldwide. In a study conducted in England, it was demonstrated that a great number of students and their families would like to see the return of free university education; in addition, many respondents did not agree that universities should be allowed to take the unilateral decision to increase their tuition fee (University and College Union, 2010).

According to a study in New Zealand, the choice of every fourth student was influenced to a great extent by the amount of tuition fee that they had to pay, and a significant part of drop-out students identified their inability to cover tuition fee costs as the main reason for leaving college (New Zealand Union of Students' Associations, 2010). Li and Min (2001) found a direct correlation between the increase in tuition fee and the rise of the likelihood for a student to drop out. However, the findings of our study do not completely concur with the above conclusions. Other

scientists also disagree that a tuition fee increase is the leading factor in the decision-making process of applicants. They point out that the effects of a tuition fee increase should be examined not in isolation, but in the context of other factors which might influence this decision such as family income or the necessity of living away from home (Deming & Dynarski, 2009; Hübner, 2012). Heine at al. (2008) reported that 75% of all first semester students stated that the closeness to home was one important determinant in the choice of university.

Although observations made in Scotland in 2001 and in England in 2012 clearly demonstrate that a steep increase of the tuition fee leads to a reduction in the number of applicants, the authors add that the trend is intensified when a rise in tuition fees is coupled with a low level of employment-after-graduation expectancy. As could be expected, a drop in tuition fees is associated with an increased number of applicants to university programs whose graduates do not typically enjoy a high remuneration level or a high percentage of employment after graduation. But an experiment involving students at several Dutch universities demonstrated that even though students' enrollment rate changed as a consequence of a reduced course fee, this change did not last long, and their regular enrollment rate soon returned to its original level (Ketel, at al., 2016). The conclusion drawn is that the effect of financial stimuli is transient. Sá, (2014) concludes that students are generally ready to pay more to study majors that are linked to a greater income and a lower unemployment rate. These statements are consistent with our findings.

Furthermore, Marcucci and Johnstone (2007), while systemizing the results of various studies in Australia, Canada, China, Holland, New Zealand, the UK, and the US, deduced that a rise in tuition fees does not affect the demand for university education on the macro level, albeit it might influence the share of social and economic groups of the total number of enrolled students. Buerhaus at al. (2009) insisted that it is the remuneration level expected upon graduation that plays a major role in the decision-taking process of applicants. The applicant choice of programs in Medicine should be expected to be also influenced by the insignificant unemployment rate and the high remuneration observed among professionals in the field. However, such motivation is typically found among applicants to Medicine in particular, and not to Nursing, the nursing profession being characterized by a noticeably decreasing attractiveness, which is pointed out in our study. Students' *gain* reflects their projected income, the possibility for professional growth and the low risk of unemployment after graduation (Alstadsæter, 2011).

Ke (2012) also identified a multitude of factors (such as the university ranking and the quality of education) that affect foreign students' choice of a given university, yet the leading one was found to be tuition fees. According to Card (1999), the correlation between the projected income after graduation and the costs of education (not only financial costs, but also the length of study, the difficulty of the course, the need for acquiring additional skills, etc.) is key for the choice of a future profession. One makes a rational choice when one compares the expenses (sacrifices) to the expected gain. The expenses that students incur in the course of their studies are of three major types: *personal expenses, cost of education*, and *loss of income.* The first type, *personal expenses*, includes living expenses, the cost of food and lodging, commuting expenses, clothing and the like. Such expenses ought to be calculated into the total costs of a university degree, yet are too often overlooked in many European countries (Schwarz & Rehburg, 2004). The second type, *cost of education*, comprises mainly tuition fees, and to a much lesser extent - the cost of books and similar fees. These costs play a major part in increasing the income of a university, and in allowing equal access to applicants regardless of their background. Still, these are costs that are obligatory for all admitted students (unless offset by some form of financial aid) (Marcucci & Johnstone, 2007).

Loss of income addresses the income that could have been generated, had it not been for the full-time academic load. Baxter and Birks (2004) claim that the highest cost that students need to pay is their lost income, i.e. all the income that they could have incurred during the years of study. In this context, the amount of financial aid, be it in the form of a governmental subsidy or a scholarship offered by a private company or person, may have a decided influence on the demand by prospective students. The demand for university programs in Medicine, for instance, could lessen significantly if the governmental subsidy in Bulgaria were to decrease, especially if, in addition to the rise in costs, the initial investment in education is of a slow return (as happens when the level of remuneration in the sector becomes lower). On the other hand, if students had to pay no tuition fee, we could expect to be faced with an extreme demand for university programs in Medicine. This, however, cannot happen since admission to programs in Medicine is conditional upon GPA, entrance exams, and other requirements (Scheffler, at al., 2012).

The amount of tuition fees per semester depends on the pricing policy of educational institutions, which in turn is based on variables such as Gross National Income per capita, inflation, sources of revenue, etc. (Boroch, at al., 2010). An important factor is salary expenditure especially for universities that offer programs in the medical field since in order to attract qualified medical practitioners as lectors, universities have to base their remuneration on the typically high salary level of professionals engaged in medical practice. In Bulgaria, the level of state subsidy is strictly regulated and cannot be increased, thus universities are usually forced to increase the sole major source of income that they have control of, namely, tuition fee. This is a reflection of the shift in understanding: since the state no longer identifies the whole society as the beneficiary of tertiary education, the burden of payment is transferred onto the one who profits most, the student (Education Directions, 1997; Baxter & Birks, 2004).

5. Conclusions

The results of the study revealed that many of respondents find even the current level of tuition fee to be too high when compared to the standard of living in Bulgaria, with only 23.1% finding the level of tuition fee to be acceptable. Most of the students, 68.8%, would leave the university if the tuition fee increased by more than 30%. Still, the results of our regression analysis clearly show that only 4% of the drop-out decision is motivated by a potential increase in tuition fee. The prognostic strength of the models that include intrinsic motivational factors of Nursing students is much greater, which allows us to conclude that a rise in tuition fee of already enrolled students is not the sole nor the most significant influencing factor on their decision to leave the university program.

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