

Economic Aspects, Economic Assessment and Career Preferences of Doctor of Pharmacy (PharmD) Students in India

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ABSTRACT

Background: PharmD study program is newer in India. There is tremendous scope for this study program in the country but it will take more time for PharmD to get well developed as a firm career option for the current and prospective students. Therefore, we aimed to determine the economic aspects of the Indian PharmD students. We also conducted the cost benefit analysis of the study program and analyzed the career preferences of the students. **Methods:** A 30-item questionnaire was developed, validated and administered to the current PharmD students in the nation. The web-based survey instrument was launched by following modes- through Head of the institute/department, faculties, class representatives, Facebook groups, What's app groups and personal contacts. Cost benefit analysis of the economic data was conducted. **Results:** Total 253 students responded to the survey from various states of India. The average values for selected parameters were as follows (in Indian Rupees)- Annual fee- 1,10,277.18 (\$1667.07), Loan/borrowing taken- 1,07,905.25 (\$1631.22), Monthly internship stipend- 334.04 (\$5.05), Scholarship/funding received during PharmD- 4802.44 (\$72.59), Expected monthly salary- 36,156.63 (\$546.58). Benefits to costs ratio was 1.34. In jobs, 61.26% students opted to become clinical pharmacists. **Conclusion:** The cost benefit analysis reflected the PharmD degree to be beneficial. Though not perfectly implementable, our study provides valuable future directions to policy makers, forthcoming researchers, and the PharmD students.

Key words: PharmD, India, Economics, Cost benefit analysis, Students, Pharmacy.

INTRODUCTION

PharmD (Doctor of Pharmacy) is a doctoral degree in pharmacy. According to the website of Pharmacy council of India (PCI),¹ more than 200 institutes exist in India offering PharmD. This study program started in India in 2008.² Apart from regular B. Pharm, it has got many subjects emphasizing pharmacy practice such as- pharmacotherapeutics, community pharmacy, clinical pharmacy, clinical toxicology, biostatistics and research methodology, clinical pharma-

cokinetics, therapeutic drug monitoring, pharmacoepidemiology, clinical research, pharmacoeconomics. One can get admitted to PharmD after 10+2 (i.e. PharmD) or after B. Pharm degree i.e. PharmD (post baccalaureate i.e. PB).² PharmD (PB) is slightly different than M. Pharm (Pharmacy Practice) degree in India.² Currently, there are mixed opinions about this program in the country as mentioned in Table 1.²⁻¹²

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Table 1: Positive and negative aspects of PharmD program [2-12]

Positive aspects for a PharmD graduate/s	Negative aspects for a PharmD graduate/s
<ol style="list-style-type: none"> 1. PharmD colleges are increasing in number 2. Emerging job opportunities like medical writing, pharmacovigilance, clinical research and many more^{3,4} 3. Higher hospital exposure² 4. Can work in hospitals as a clinical pharmacist⁴ 5. Can be a valuable asset in rural parts of India⁵ 6. Possible major support to Indian healthcare system⁴ 7. PharmD is recommended as the basic educational qualification for the pharmacists in India^{4,6} 	<ol style="list-style-type: none"> 1. PharmD is still a new concept in India² 2. 'PharmD' may take more time to settle in India as a career option² 3. 29% PharmD students don't see it as a financially rewarding career⁷ 4. Challenges in front of a PharmD graduate are- improper exposure to clinical (pharmaceutical) care, lack of partnership and coordination between hospitals and pharmacy colleges, lack of regulatory framework, poor awareness among common people, no recognition from regulatory network, paying more fee than any other pharmacy courses in the country, lack of government/government aided institutes, poor research quality and quantity, no competitive stipend as compared to other doctoral programs in the country, no stipend for GPAT qualified PharmD (PB) students, lack of skilled teaching staff, less number of people in PharmD as compared to other pharmacy courses in India, improper strategies of the government toward pharmacists etc.^{4,8-11} 5. Academicians are also concerned about PharmD¹²

Because of the mixed opinions, the current PharmD students, their parents and academicians are still concerned about the future, scope and job opportunities related to PharmD.^{2,12} In short, a PharmD student's mindset is still confused between the positive and negative aspects of the study program. Means, although there is scope to PharmD in India, a student does have to deal with the problems i.e. the negative aspects as mentioned earlier. Moreover, students are considered to be "the economically inactive group for a nation"¹³ (means don't generally earn money). Therefore, it would be interesting to know how the students are dealing with the economic expenses and gains during the student life and what their career preferences are. To the best of our knowledge, no study has been reported in Indian literature analyzing the financial aspects of PharmD students. Therefore, we aimed to determine the same.

Objectives

To investigate the economic aspects including gains and losses, to perform cost benefit analysis of the PharmD program and to determine the career preferences of the PharmD students in India

METHODS

The approval was obtained from the institute to conduct the study.

Study design

This was a web-based, prospective, cross sectional study evaluating the economic and career aspects of PharmD students in India. All the students currently pursuing

PharmD course in India were considered to be eligible to respond to the survey. The survey was anonymous.

The instrument

Development of the instrument

A draft questionnaire was framed based on 3 aspects such as: literature review, student interviews and expert opinions.

Review of the literature was conducted to find out the following factors- common student expenses, economic challenges for PharmD students, economic studies on pharmacy students, status of PharmD in India and the career choices etc. An exploratory 5-10 minutes interview was conducted with 20 PharmD students from different backgrounds to find out the areas of the possible domains/questions. The domains/questions were decided after enlisting the economic gains/losses and career preferences given by the students. The diverse backgrounds of the students interviewed involved- boys and girls; students with and without educational loan; students in government and private institutes; students getting funding from government bodies or not; NRI (Non-residential Indian)/Indian students; employment status of guardian i.e. job/business/farming; students studying in different years of PharmD. Five experts i.e. PharmD faculties were also consulted to determine the possible areas and questions in the survey form.

Validation of the instrument

Validation of the draft instrument was performed by using 2 methods-expert opinions and pilot testing. Seven reviewers were asked to critically review the survey form for the following things- content validity, flow,

Table 2: Description of the instrument used

Section no.	Name of the section	Question asked about	Number of questions
1.	Demographics	Indian/non-Indian student, year of the course pursuing, status of the institute (government/government aided/unaided/private), gender, state/union territory of the PharmD institute, state/union territory/ country where parents are staying	06
2.	Fee, family and institute related questions	Amount of annual fees, annual income of family, employment status of the guardian, number of installments to pay the fees, reasons to select an institute, fees during internship etc.	06
3.	Loan/borrowing related questions	Amount of educational loan/borrowing, duration of reimbursement of loan/borrowing, is loan burdensome? Etc.	03
4.	Scholarship/funding related questions	Scholarship/funding authority, type of scholarship/funding, amount of scholarship/funding etc.	04
5.	Other expenses' related questions	Monthly living expenses, status of student health insurance, money spent to travel to hometown, etc.	03
6.	Salary, job and career related questions	Monthly income (if doing job during PharmD), expected first salary after PharmD, highest and lowest salary heard/seen after PharmD, basis for selecting a job, what to do after PharmD, type of education interested, type of job interested etc.	08
Total questions			30

grammar, language etc. The draft instrument was tested on 20 students for determining the efficiency, easiness in responding, range of options etc. The opinions given by experts and students were taken into consideration before finalizing the instrument. The data obtained from pilot study was not used for final analysis.

Description of the instrument

After development and validation, the 30-item questionnaire was finalized. All questions in the survey form were closed-ended. The description of each section of the instrument is as given in the [Table 2].

Launching of the instrument

This web-based survey was conducted by using “Google forms”. After development and validation, the survey forms were sent to the PharmD students in India in different institutes. Foreign students pursuing PharmD in India were also included in the survey. The students were approached by using following methods- through head of the institute/department, through faculties, through class representatives, by using personal contacts (i.e. primary, secondary and tertiary), through facebook groups, through what'sapp groups. The background and objectives of the study were mentioned in the survey form. The informed consents were obtained from the students. It was ‘mandatory’ for the students to respond to all the questions in the survey. Convenience and snow-ball samplings were adopted. The Cronbach’s alpha value for the survey form was measured by using an online spreadsheet.¹⁴

Outcomes and data analysis

The study was conducted for 3 months. Microsoft Excel (2007) was used for statistical analysis. The margin of error for the study was calculated by using Raosoft calculator.¹⁵ The average values for all type of economic data were calculated to conduct cost benefit analysis. \$1 was considered to be equal to INR 66.15.

Economic assessment

The average values per student were calculated for the following things by using median and the number of responses- annual fee, annual family income, installments to pay the fee, educational loan/borrowing taken, expected duration to reimburse loan/borrowing, monthly internship stipend, annual scholarship/funding received, monthly other expenses, annual expenses for traveling to hometown and back, monthly salary during education (if he is doing job during his PharmD learning), expected salary as a recent graduate, highest/lowest salary seen/heard as a recent graduate etc.

How were the calculations done?

Explanation for the economic assessment of the students [Table 5]

The fee paid by a student was calculated as follows [Table 3]. The range for an option was 1-50,000 Indian rupees. The median for this range was 25,000.5/-; the number of responses were 49. The total cost for this response range was equal to multiplication of median and number of responses (i.e. A=12,25,024.50/-). Likewise, the total costs for each response range were calculated (e.g. B, C,

D, E, F, G). Then, total costs in a question were summed (A+B+C+D+E+F+G) and then they were divided by total number of respondents i.e. 253.

We have taken the economic value as 'zero' for some questions. E.g. No loan/borrowing (for loan related question), reimbursed loan, no interns/stipend, no financial assistance, no health insurance, studying in home town and no monthly income (for students doing job during learning). The median was not applicable for such options but we considered the number of responses to calculate the average values for that particular question.

Explanation for economic evaluation for installments and fee paid during internship [Table 6]

Fee paid during installments

In Table 6, the average installments paid per student were calculated. The numbers of installments were multiplied by number of responses to calculate sum of the installments for each option. Total numbers of installments were calculated by summing the 'sum of installments'. The average installments paid per student were sum of the total installment paid in each category divided by total number of respondents i.e. 253.

e.g. The number of students who paid fee in 2 installments were 52. So, the total installments for them were 104 (Q).

average installments per student = $(P+Q+R+S+T+U) \div \text{Total respondents in the study (253)}$

= $(162+104+81+32+10+12) \div 253 = 1.58$

Fee paid during internship

Suppose 15 students pay 50% of the regular fee during internship. Hence, average fee paid by a student a year was divided by 2 and the value was multiplied by 15. Sum of all such responses was done to determine the total fee paid during internship by all respondents. The final value was divided by number of total respondents i.e. 253 to compute average fee paid by a candidate during internship.

Explanation for the cost benefit analysis (as given in [Table 7])

For cost benefit analysis, the reasons for which a PharmD student is 'spending' money and the means by which he is 'earning' money were considered. The economic values were categorized as costs (reasons for which a PharmD student is 'spending' money) and benefits (means by which a PharmD student is 'earning' money) shown in [Figure 1].

Cost benefit analysis = $\frac{\text{Means by which a PharmD student is 'earning' money (Benefit)}}{\text{Reasons for which a PharmD student is 'spending' money (Cost)}}$

For calculations, all the values were converted to 'average money (earned/spent) per student per year' by considering suitable multiplication factors and denominators for the averages.

Loan was considered in both columns i.e. costs and benefit. The loan was correlated with burden to determine whether it was 'cost' or 'benefit' for the students. For the students who don't consider the debt as a burden, the value was considered as 'earning' while those who take debt as a burden were considered as 'spending'.

Practical adjustments made for cost benefit analysis

It won't be practical to have the lower limit of 1 rupee for few parameters in the cost benefit analysis. But, for calculation purpose we considered the same. The parameters were- annual fee, annual family income, loan/borrowing, stipend during internship, scholarship/funding, monthly other expense, traveling to hometown and back, salary during PharmD, expected salary and highest/lowest salary seen/heard as a recent graduate. Likewise, it would be difficult for anybody to keep the upper limit for few parameters in our survey. Such parameters involved- annual family income, loan/borrowing taken and expected salary after PharmD. But for calculation sake we kept the upper limits as 25 lakhs (2.5 million), 30 lakhs (3 million), and 60 thousands (0.006 million) respectively.

RESULTS

The internal consistency of the survey instrument was 0.91.¹⁴ According to Raosoft calculator, for the current sample size (i.e. 253) margin of error was 6.12% with the 95% confidence level and response distribution 50%.¹⁵ The ratio of PharmD to PharmD (PB) was 7.16

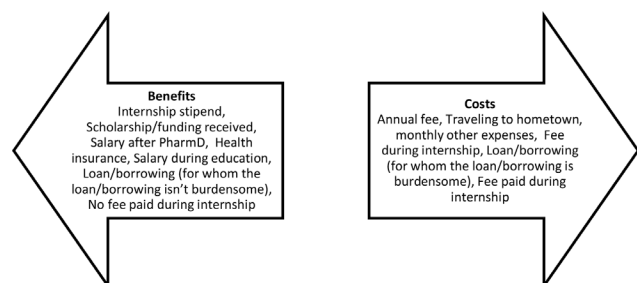


Figure 1: Costs and benefits of the PharmD students

Table 3: Calculations for average fee paid by a student			
Economic range	Median	No. of responses	Total cost
1-50,000	25,000.5	49	Median X No. of responses= 12,25,024.50 (A)
$\text{Average fee paid by a student} = \frac{A + B + C + D + E + F + G}{\text{Total respondents in the study (253)}}$			

whereas female:male ratio was 1.81. The other results of the study involving the question category, the question, type of question, options, number of responses and percentages were as depicted in [Table 4]. The key points in results were as follows. Majority of the students (73.91%) in this study belonged to private institutes. Nearly half of the students pay fee in the range of 1 to 1.5lakh/annum and have family income ≤ 3 lakhs/annum. About 36% students pay their fee in more than 1 installment while status of the institute was the highest reported (35.80%) reason for admission. Approximately 77% students haven't taken any loan or borrowing for their education. Roughly one fourth of the respondents expect the salary >50 thousands a month after completion of PharmD degree. For the question "What you want to pursue after PharmD?", nearly 36% students (the highest) wished to pursue a government job in India and rest wanted to pursue private job/education in India/abroad. Majority (61.26%) students wanted to work as a clinical pharmacist when asked "What kind of job you wish to pursue after PharmD?"

DISCUSSION AND RECOMMENDATIONS

To the best of authors' knowledge, this study is the first Indian study analyzing the economic aspects of PharmD students and conducting the cost benefit analysis of the study program. Srikant *et al.*⁸ assessed the attitude of Indian PharmD graduates toward the pharmacy curriculum and pharmaceutical care. Nearly 3% (n=3) non-Indian students responded to the survey while in this study, non-Indian students were 1.58% (n=4). Six students in this survey reported that their parents don't stay in India whilst 4 students claimed to be non-Indian (as mentioned in [Table 4]). We suspect 2 students to be non-residential Indians.

In India, almost all institutes running the program belong to private sector.^{4,11} Government/government aided institutes running PharmD program are negligible. This might be the reason behind fewer responses we received from the students of government/government aided institutes vs. private/unaided institutes (26.09% vs. 73.91%). As mentioned in the literature⁴, there is need of more and more government/government aided institutes in India for PharmD.

Overall, one can't deny the fact that the female students getting admitted to PharmD, are more in proportion than males. This might be the reason; we received fewer responses from male students. The possible cause behind this scenario is typical psychology in 'Indian families'. The likely psychologies for the female dominance in PharmD are- 'PharmD is a good basic course for a girl to get married'; 'the girl with doctoral degree may marry to a reputed professional person like a doctor'; 'easier to fly abroad after marriage (if the husband is well settled in a foreign country)'. The probable grounds for less admissions of males to PharmD in India are- less job prospectuses after PharmD, uncertainty about the salary, uncertainty about settlement in life, poor awareness about PharmD among recruiters. The proportion of female responders was higher in many other studies conducted on PharmD students e.g. Danisha *et al.*⁷ (84.1%), Venkata *et al.*¹⁶ (61%) and the recent AACCP (American Association of Colleges of Pharmacy) 2015 survey¹⁷ (62.8%). This study also reports higher female responders than males i.e. 64.43%. Suitable, efficient and focused inputs are needed for making PharmD as a firm career option (especially for boys).

Increasing cost of pharmacy education is an issue of concern in USA.¹⁸ On the similar grounds, though worried about their future, 'PharmD' and 'PharmD (PB)' students are paying more fee than 'B. Pharm' and 'M. Pharm' students respectively.⁴ But more than 50% students in our study reported to have average middle class family income. Moving to the next aspect, annual fee of the institute and distance between the institute and hometown are one of the major factors determining the expenses for a student. This is why these options were decided for the question 'What made you to prefer the current institute to pursue PharmD?'. But 35.80% students (the highest responses) opted for 'status of the institute'.

May not be there in other countries, but 'payment of stipend and fee during PharmD-internship' is one of the hot and debatable topics of discussion among the Indian students. PharmD interns receive no or non-competent stipend during internship⁴ and moreover many PharmD students are supposed to 'pay' fee during their 'internship'.^{19,20} Students of other doctoral programs in India [like MBBS (Bachelor of Medicine and Bachelor

Table 4: Results of the survey

Question category	Question (Type of question)	Options	No. of responses	Percentage
Demographics	I am a/an ____ student	Indian	249	98.42%
		International	4	1.58%
		Total	253	100%
	I am pursuing ____.	1 st year PharmD	46	18.18%
		2 nd year PharmD	38	16.67%
		3 rd year PharmD	29	12.72%
		4 th year PharmD	34	14.91%
		5 th year PharmD	46	20.18%
		6 th year PharmD	29	12.72%
		1 st year PharmD (PB)	3	1.32%
		2 nd year PharmD (PB)	12	5.26%
		3 rd year PharmD (PB)	16	7.02%
		Total	253	100%
	I belong to a ____ institute.	Government/government aided	66	26.09%
		Private/unaided	187	73.91%
		Total	253	100%
	I am a ____.	Male	90	35.57%
		Female	163	64.43%
		Total	253	100%
	My PharmD institute is located in ____ state/union territory in India.	AP	48	18.97%
		GJ	45	17.79%
		KA	22	8.70%
		KL	1	0.40%
		MH	124	49.01%
		PB	1	0.40%
		TG	2	0.79%
		TN	10	3.95%
		Total	253	100%
	My parents stay in ____.	AP	50	19.76%
		BR	1	0.40%
		CG	2	0.79%
		DL	1	0.40%
		GJ	48	18.97%
		HP	1	0.40%
		HR	1	0.40%
		JH	1	0.40%
		KA	1	0.40%
		KL	18	7.11%
		MP	1	0.40%
		MH	102	40.32%
		PB	1	0.40%
		RJ	2	0.79%
		TN	2	0.79%
		TG	12	4.74%
		UP	2	0.79%
		WB	1	0.40%
		Iran	2	0.79%
		Nepal	1	0.40%
		Oman	1	0.40%
Qatar	1	0.40%		
UAE	1	0.40%		
		Total	253	100%

Table 4: Cont'd.

Fees, family and institute related questions	What is the annual fee for your course? (MCQ)	≤50,000 (\$755.85)	49	19.37%
		50,001 - 1,00,000 (\$755.87-1511.72)	53	20.95%
		1,00,001- 1,50,000 (\$1511.73-2267.57)	119	47.04%
		1,50,001- 2,00,000 (\$2267.59-3023.43)	15	5.93%
		2,00,001 - 2,50,000 (\$3023.45-3779.29)	7	2.77%
		2,50,001 - 3,00,000(\$3779.30-4535.15)	5	1.98%
		3,00,001-6,00,000 (\$4535.16-9070.29)	5	1.98%
		Total	253	100%
	What is your annual family income? (MCQ)	≤3,00,000 (\$4535.15)	130	51.38%
		3,00,001 - 5,00,000(\$4535.16-7558.58)	60	23.72%
5,00,001 - 7,00,000 (\$7558.59-10582.01)		35	13.83%	
7,00,001 - 10,00,000 (\$10582.03-15117.16)		17	6.72%	
10,00,001 -12,00,000 (\$15117.17-18140.59)		8	3.16%	
>12,00,000 (\$18140.59)	3	1.19%		
Total	253	100%		
What is the employment status of your guardian? (MCQ)	Government/Private job	79	31.23%	
	Businessman/professional	51	20.16%	
	Farmer/Cultivation	117	46.25%	
	Unemployed/retired	6	2.37%	
	Total	253	100%	
In how many installments do you pay the fees in a year? (MCQ)	1	162	64.03%	
	2	52	20.55%	
	3	27	10.67%	
	4	8	3.16%	
	5	2	0.79%	
	6	2	0.79%	
	Total	253	100%	
What made you to prefer the current institute to pursue PharmD? (Check box)	Less fees	40	11.83%	
	Nearer from hometown	89	26.33%	
	Good status of the institute	121	35.80%	
	Better infrastructure and facilities e.g. DIC, faculties	67	19.82%	
	Other ¹	21	6.21%	
Total	338	100%		
How much fees are you/your seniors paying during internship? (MCQ)	Our institute has no interns/Don't know	74	29.25%	
	No fees	37	14.62%	
	50% of regular fees	15	5.93%	
	100% of regular fees	127	50.20%	
	Total	253	100%	
Loan/borrowing related questions	How much of educational loan or borrowings have you/your guardian taken to pay your fees? (MCQ)	No loan/borrowings	195	77.08%
		≤1,00,000(\$1511.72)	5	1.98%
		1,00,001-3,00,000 (\$1511.73-4535.15)	22	8.70%
		3,00,001-5,00,000(\$4535.16-7558.58)	14	5.53%
		5,00,001-7,00,000(\$7558.59-10582.01)	8	3.16%
		7,00,001-10,00,000(\$10582.03-15117.16)	5	1.98%
		≥10,00,001(15117.17)	4	1.58%
	Total	253	100%	
	After completion of the course, how long will it take for you to reimburse the loan? (MCQ)	Not applicable/reimbursed	191	75.49%
		0.1-1 year	6	2.37%
1 - 3 years		26	10.28%	
3 - 5 years		13	5.14%	
5 - 7 years		7	2.77%	
7 - 10 years		6	2.37%	
10.1-20 years	4	1.58%		
Total	253	100%		
Is taking educational loan/borrowing money burdensome for you? (MCQ)	Not applicable	182	71.94%	
	Yes	54	21.34%	
	No	17	6.72%	
	Total	253	100%	

Table 4: Cont'd

Scholarship/ funding related questions	How much of stipend are you/your seniors receiving during internship? (MCQ)	Our college has no interns	66	26.09%
		No, stipend is not there	163	64.43%
		≤1,000/month (\$15.12)	4	1.58%
		1,001- 5,000/month (\$15.13-75.59)	15	5.93%
		5,001-10,000/month (\$75.6-151.17)	5	1.98%
	Total	253	100%	
	Who pays/has paid for the scholarship/funding/financial assistance during your PharmD? (MCQ)	No financial assistance/scholarship/funding	177	69.96%
		State government	55	21.74%
		Central government	6	2.37%
		NGO	2	0.79%
Private funding	13	5.14%		
Total	253	100%		
How will you categorize the reason for your scholarship/funding? (MCQ)	Not applicable	178	70.36%	
	EBC	29	11.46%	
	Caste/minority	30	11.86%	
	Parent's employing agency scheme e.g. Railways	4	1.58%	
	General scholarship for academic excellence	12	4.74%	
Total	253	100%		
How much of scholarship/funding/ financial assistance are you receiving/have received during PharmD? (MCQ)	Not receiving	218	86.17%	
	≤10,000/annum (\$151.17)	9	3.56%	
	10,001 - 30,000/annum(\$151.19-453.51)	11	4.35%	
	30,001 - 50,000/annum (\$453.53-755.86)	2	0.79%	
	50,001 - 80,000/annum (\$755.87-1209.37)	12	4.74%	
	80,001 - 1,00,000/annum (\$1209.39-1511.72)	1	0.40%	
	>1,00,000/annum (\$1511.72)	0	0.00%	
Total	253	100%		
Other expenses' related questions	What are your total monthly living expenses other than college fees? (MCQ)	≤4,000(\$60.47)	83	32.81%
		4,001 - 7,000 (\$60.48-105.82)	98	38.74%
		7,001 - 10,000 (\$105.84-151.17)	45	17.79%
		10,001- 20,000 (\$151.19-302.34)	27	10.67%
		Total	253	100%
	What are the things covered for you under the student health insurance? (Check box)	No student health insurance	180	64.06%
		Don't know	58	20.64%
		Medical check-up	13	4.63%
		Diagnosis/Laboratory tests	11	3.91%
		Medicines	4	1.42%
		Surgery	4	1.42%
		Bed charges	4	1.42%
		≤25% expenses waived	2	0.71%
26 - 50% expenses waived		4	1.42%	
51 - 75% expenses waived		1	0.36%	
76 - 100% expenses waived	0	0.00%		
Other	0	0.00%		
Total	281	100%		
How much of total money do you spend to travel to your hometown in one academic year? (MCQ)	I am studying in hometown	43	17.00%	
	≤1,000 (\$15.12)	18	7.11%	
	1,001 - 5,000 (\$15.13-75.58-151.17)	93	36.76%	
	5,001 - 20,000 (\$75.60-302.34)	79	31.23%	
	20,001 – 50,000 (\$302.35-755.85)	17	6.72%	
	50,001-1,00,000 (\$755.87-1511.71)	3	1.19%	
	Total	253	100%	

Table 4: Cont'd

Salary, job and career related questions	What is your monthly income, if you are doing a job during PharmD?	Not applicable	216	85.38%
		≤5,000 (\$75.59)	4	1.58%
		5,001 - 10,000 (\$75.60-151.17)	5	1.98%
		10,001 - 15,000 (\$151.19-226.76)	5	1.98%
		15,001 - 20,000 (\$226.77-302.34)	8	3.16%
		20,001-40,000 (\$302.36-604.69)	15	5.93%
		Total	253	100%
	How much monthly salary do you expect (as a recent graduate) after completion of PharmD? (MCQ)	≤15,000 (\$226.76)	5	1.98%
		15,001 - 20,000 (\$226.77-302.34)	20	7.91%
		20,001 - 25,000 (\$302.36-377.93)	36	14.23%
	25,001 - 30,000 (\$377.94-453.51)	36	14.23%	
	30,001 - 35,000 (\$453.53-529.1)	29	11.46%	
	35,001 - 40,000 (\$529.12-604.69)	41	16.21%	
	40,001-50,000 (\$604.7- 755.86)	25	9.88%	
	≥50,001 (\$755.87)	61	24.11%	
	Total	253	100%	
Highest salary package seen/heard for a PharmD student as a recent graduate (Grid)	≤3 lakhs/annum (\$4535.15)	80	31.62%	
	3.01 - 4 lakhs/annum (\$4550.26-6046.86)	90	35.57%	
	4.01 - 5 lakhs/annum (\$6061.98-7558.58)	25	9.88%	
	5.01 - 6 lakhs/annum (\$7573.7-9070.29)	12	4.74%	
	6.01 - 7 lakhs/annum (\$9085.41-10582.01)	20	7.91%	
	7.01-10 lakhs/annum (\$10597.13-15117.16)	26	10.28%	
	Total	253	100%	
Lowest salary package seen/heard for a PharmD student as a recent graduate (Grid)	≤3 lakhs/annum (\$4535.15)	197	77.87%	
	3.01 - 4 lakhs/annum (\$4550.26-6046.86)	28	11.07%	
	4.01 - 5 lakhs/annum (\$6061.98-7558.58)	9	3.56%	
	5.01 - 6 lakhs/annum (\$7573.7-9070.29)	16	6.32%	
	6.01 - 7 lakhs/annum (\$9085.41-10582.01)	2	0.79%	
	7.01-10 lakhs/annum (\$10597.13-15117.16)	1	0.40%	
	Total	253	100%	
On what basis will you select your job after PharmD? (MCQ)	Salary as a recent graduate	58	22.92%	
	Salary growth rate	64	25.30%	
	Area of interest	118	46.64%	
	City with lowest living expenses	6	2.37%	
	Other ²	7	2.77%	
	Total	253	100%	
What would you like to pursue after PharmD? (MCQ)	Government job in India	91	35.97%	
	Private job in India	39	15.42%	
	Education in India	1	0.40%	
	Education in abroad	22	8.70%	
	Job + Education (external/part time) in India	27	10.67%	
	Job in abroad	60	23.72%	
	Marriage	0	0.00%	
	Undecided/ some other plan	13	5.14%	
	Total	253	100%	
If allowed to learn, what kind of education would you like to pursue after PharmD? (MCQ)	Specialization*	136	53.75%	
	MBA/M. Pharm/MS/MPH/MSc	34	13.44%	
	Full time PhD	19	7.51%	
	Part time PhD	32	12.65%	
	Non pharmacy/healthcare related education/ career	9	3.56%	
	Other ³	6	2.37%	
	Undecided/Not applicable	17	6.72%	
	Total	253	100%	
What kind of job would you like to pursue after PharmD? (MCQ)	Academics	11	4.35%	
	Clinical Pharmacist	155	61.26%	
	Company/industry related job	56	22.13%	
	Non pharmacy related job	3	1.19%	
	Non-pharmacy-related business	1	0.40%	
	Undecided/Not applicable Pharmacy-related business	12	4.74%	
	Other ⁴	13	5.14%	
	Other ⁴	2	0.79%	
	Total	253	100%	

Table 4: Cont'd

1: Other reasons for selecting the current institute were: Government institute (3), Followed admission process as per entrance exam ranking (5), The only institute offering PharmD/PharmD(PB) at the time of admission in the state (3), Availability of PharmD/PharmD(PB) in the institute (2), Good scope in abroad (1), Newer course (1), Liked the course structure (1), Limited seats (1), Wanted to become a doctor and better scope (1), Wanted to become a doctor and help villagers (1), Limited seats (1), No other option (1) etc.

2: Other criteria to choose a job included: Both area of interest and salary growth rate (1), City where my relatives are staying (1), Job satisfaction (1), Status of working area (1), Scope to move abroad (2), Knowledge and clinical basis (1) etc.

3: MD (3), Public Service Commission Exam (3) etc.

4: Research related job (2) etc.

*This was not a part of the survey. The option has been framed based on the responses we received.

AP= Andhra Pradesh; BR= Bihar; DL= Delhi; GJ= Gujarat; HP= Himachal Pradesh; HR= Haryana; JH= Jharkhand; KA= Karnataka; KL= Kerala; MH= Maharashtra; MP= Madhya Pradesh; PB= Punjab; RJ= Rajasthan; TG= Telangana; TN= Tamilnadu; UAE= United Arab Emirates; UK= Uttarakhand
UP= Uttar Pradesh

of Surgery), BDS (Bachelor of Dental Surgery), BAMS (Bachelor of Ayurvedic Medicines and Surgery) or BHMS (Bachelor of Homeopathic Medicines and Surgery)] receive competitive stipend and they don't pay any fee during the internship. According to an information brochure published by AIIMS (All India Institute of Medical Sciences) in 2009, an MBBS intern may receive the stipend of Rs. 8900/- per month (with no payment of fee).²¹ But ironically, PharmD students pay fee during internship rather than receiving the stipend. Moreover, the stipend of PharmD students is uncompetitive in nature.⁴ Additionally, PCI (Pharmacy Council of India) has made 2 circulars until now regarding 'PharmD-stipend'; first in 2013¹⁹ and other one in 2015²⁰ and both unfortunately ascertain taking fee (directly or indirectly) during the internship. This study reports that 50.20% students paying 100% fee during internship while 5.93% students paying 50% fee during internship. Furthermore, 64.43% students have reported that they don't get stipend at all or they don't have interns in their institute. A rigid policy is required so that PharmD interns need not to pay fee during internship like other doctoral programs and it *shouldn't* be structured in a manner to accommodate stipend as an admissible expenditure.

Increasing student indebtedness is one of the significant problems in USA.^{22, 23} According to AACCP survey 2015¹⁷, 88.6% students borrowed money to help pay for college expenses in the PharmD degree program. In the current study, number of students taking loan/borrowings was comparatively less i.e. 22.92%.

Park and colleagues²⁴ from USA had identified 3 themes in student's attitudes toward debt such as- tolerant attitude toward debt, contemplation and knowledge about loans, and fear of debt. In this study, 21.34% students reported that taking educational loan/borrowing money was burdensome for them. Students who haven't taken loan/borrowing are 195 as indicated by our study, 182 students declared the question (Is taking educational loan/borrowing money burdensome for you?) was not

applicable to them. The authors of this study suspect that the remaining 13 students responded either to 'yes' or 'no' by considering this as a general question. The question "After completion of the course, how long will it take for you to reimburse the loan?" was asked to determine the confidence level of a student to earn money after PharmD.

There are several central government authorities in India providing scholarships/funding to engineering and medical students such as ICMR (Indian Council for Medical Research), AICTE (All India Council for Technical Education), Ministry of health, Ministry of minority affairs, Ministry of human resource development etc. Additionally, GATE/GPAT qualified students pursuing M. Pharm receive competitive stipend for 2 years while PharmD (PB) students don't do.⁴ It's extremely rare to see a PharmD student eligible for fellowship/scholarships/funding by central or state governments. We observed similar trend in our study i.e. 22.92% students have actually received the scholarship/funding. Government and non-governmental organizations require taking initiative to consider PharmD's for certain research grants/funding/scholarships.

Since students don't generally earn money, health insurance is a crucial part of the students' budget. Majority students in our survey (64.06%) claimed that they don't get any health insurance while 20.64% students didn't know about it. In AACCP survey 2015¹⁷, 1394 out of 10,093 pharmacy students *did not* participate in any paid outside works, whereas our study investigates 14.62% students participated in paid outside work activities.

Ahmad et al.²⁵ has reported the average salary for a PharmD graduate to be Rs. 12, 000 every month. We solicited the highest and lowest salary heard/seen for a PharmD student as a recent graduate to know the real time scenario. Average expected salary in our study is Rs. 36,156.63 a month while average salary heard/seen i.e. real time scenario is Rs. 2,98,024.22 per annum (Median of highest and lowest salaries heard/seen).

Table 5: Economic assessment of PharmD students (one row explains one option in survey form)

Factor	Lower limit of the range	Upper limit of the range	Median	No. of responses	Sum for the particular range	Total	Average (out of 253 respondents)
Annual fee	1	50000	25000.5	49	1225024.50	27900126.50 (\$421770.62)	110277.18 (\$1667.08)
	50001	100000	75000.5	53	3975026.50		
	100001	150000	125001	119	14875059.50		
	150001	200000	175001	15	2625007.50		
	200001	250000	225001	7	1575003.50		
	250001	300000	275001	5	1375002.50		
	300001	600000	450001	5	2250002.50		
Annual family income	1	300000	150001	130	19500065.00	93300126.5 (\$1410432.75)	368775.20 (\$5574.83)
	300001	500000	400001	60	24000030.00		
	500001	700000	600001	35	21000017.50		
	700001	1000000	850001	17	14450008.50		
	1000001	1200000	1100001	8	8800004.00		
	1200001	2500000	1850001	3	5550001.50		
Educational loan/ borrowing taken	0	0	N/A	195	0.00	27300029 (\$412698.85)	107905.25 (\$1631.22) (470690.15 out of the students who have taken loan/borrowing i.e. 253-195=58)
	1	100000	50000.5	5	250002.50		
	100001	300000	200001	22	4400011.00		
	300001	500000	400001	14	5600007.00		
	500001	700000	600001	8	4800004.00		
	700001	1000000	850001	5	4250002.50		
	1000001	3000000	2000001	4	8000002.00		
Expected duration to reimburse loan	0	0	N/A	191	0.00	263.10	1.04 (4.24 out of the students applicable i.e. 253-191= 62)
	0.1	1	0.55	6	3.30		
	1.1	3	2.05	26	53.30		
	3.1	5	4.05	13	52.65		
	5.1	7	6.05	7	42.35		
	7.1	10	8.55	6	51.30		
	10.1	20	15.05	4	60.20		
Monthly internship stipend received	0	0	N/A	66	0.00	84512.00 (\$1277.58)	334.04 (\$5.05) (3521.33out of the students who are receiving the stipend i.e. 4+15+5=24)
	0	0	0	163	0.00		
	1	1000	500.5	4	2002.00		
	1001	5000	3000.5	15	45007.50		
	5001	10000	7500.5	5	37502.50		
Annual scholarship/ funding received	0	0	N/A	218	0.00	1215017.50 (\$18367.61)	4802.44 (\$72.60) (33429.07 out of the students who are receiving scholarship/ funding i.e. 253- 218=35)
	1	10000	5000.5	9	45004.50		
	10001	30000	20000.5	11	220005.50		
	30001	50000	40000.5	2	80001.00		
	50001	80000	65000.5	12	780006.00		
	80001	100000	90000.5	1	90000.50		
	100001	200000	150001	0	0.00		

Table 5: Cont'd.							
Monthly other expenses	1	4000	2000.5	83	166041.50	1492613.00 (\$22564.07)	5899.66 (\$89.19)
	4001	7000	5500.5	98	539049.00		
	7001	10000	8500.5	45	382522.50		
	10000	20000	15000	27	405000.00		
Annual traveling to hometown	0	0	0	43	0.00	2095605.00 (\$65625.17)	8283.02 (\$125.21) (9979.07 out of the students who don't stay in the hometown i.e. 253-43=210)
	1	1000	500.5	18	9009.00		
	1001	5000	3000.5	93	279046.50		
	5001	20000	12500.5	79	987539.50		
	20001	500000	35000.5	17	585008.50		
	500001	100000	75000.5	3	225001.50		
Monthly salary during education	0	0	N/A	216	0.00	700018.50 (\$10582.29)	2766.87 (\$41.83) (2953.66 out of the students who are working during PharmD i.e. 253-216=237)
	1	5000	2500.5	4	10002.00		
	5001	10000	7500.5	5	37502.50		
	10001	15000	12500.5	5	62502.50		
	15001	20000	17500.5	8	140004.00		
	20001	40000	30000.5	15	450007.50		
Expected salary as a recent graduate	1	15000	7500.5	5	37502.50	9147626.50 (\$138286.11)	36156.63 (\$546.59)
	15001	20000	17500.5	20	350010.00		
	20001	25000	22500.5	36	810018.00		
	25001	30000	27500.5	36	990018.00		
	30001	35000	32500.5	29	942514.50		
	35001	40000	37500.5	41	1537520.50		
	40001	50000	45000.5	25	1125012.50		
	50001	60000	55000.5	61	3355030.50		
Highest salary package seen/heard as a recent graduate	1	300000	150001	80	12000040.00	96450126.50 (\$1458051.80)	381225.80 (\$5763.05)
	300001	400000	350001	90	31500045.00		
	400001	500000	450001	25	11250012.50		
	500001	600000	550001	12	6600006.00		
	600001	700000	650001	20	13000010.00		
	700001	1000000	850001	26	22100013.00		
Lowest salary package seen/heard as a recent graduate	1	300000	150001	197	29550098.50	54350126.50 (\$821619.45)	214822.63 (\$3247.51)
	300001	400000	350001	28	9800014.00		
	400001	500000	450001	9	4050004.50		
	500001	600000	550001	16	8800008.00		
	600001	700000	650001	2	1300001.00		
	700001	1000000	850001	1	850000.50		

PharmD students are mainly dependant on private sector for the jobs. They very rarely are being considered for government jobs.⁴ On the contrary, other professions in India like physicians and engineers do get professional high class positions in government sector like 'medical officer' and 'executive engineer' with handsome salaries after cracking certain competitive exams.

Apart from the budding stage of PharmD program in India, students seem to have a very high expectation toward salaries. For 24.11% students (highest among the other options for the question) in our investigation, the expected salary (as a recent graduate) after PharmD was more than Rs. 50,000/- (\$755.85) every month.

Pearson and Andres (2010)²⁶ had determined the factors influencing pharmacy graduates' selection of their first

Table 6: Economic evaluation of installments and fee paid during internship

Installments to pay the fee					
No. of installments	No. of responses	Sum of the installments	Total	Average installment	
1	162	162	401	1.58	
2	52	104			
3	27	81			
4	8	32			
5	2	10			
6	2	12			
Fee paid during internship					
Options	No. of responses	Average fee paid/ year	Sum of the fee as per responses	Total	Average fee paid during internship
Our institute has no interns/Don't know	74	0	0	14832280.71 (\$224221.93)	58625.61 (\$886.25)
No fees	37	0	0		
50% of regular fees	15	110277.18	827078.85		
100% of regular fees	127	110277.18	14005201.86		

Table 7: Cost benefit analysis of the PharmD students

Benefits					
Means by which a PharmD student is 'earning' money	Amount	Multiplied by	Total values per annum	Denominator for average	Final average to be considered
Average monthly internship stipend received per student	334.02	12	4008.24	1	4008.24
Average scholarship/funding received per annum	4802.44	1	4802.44	1	4624.58
Average annual salary received after PharmD (as a recent graduate)	298024.22	1	298024.22	1	298024.22
Average annual salary during PharmD	2766.87	12	33202.44	1	33202.44
Average loan per student (for whom the loan/borrowing isn't burdensome)	107905.25	17	1834389.3	253	7250.55
Average of fee during internship (who don't pay fee during internship)	110277.18	37	4080255.7	253	16127.493
Total	363415.38 (\$5493.8)				
Costs					
Reasons for which a PharmD student is 'spending' money	Amount	Multiplication factor	Total	Denominator for average	Final average to be considered
Average annual fee per student	110277.18	1	110277.2	1	110277.2
Average annual expenses for traveling to hometown	8283.02	1	8283.02	1	8283.02
Average monthly other expenses	5899.66	12	70795.92	1	70795.92
Average annual fee paid during internship per student (50% fee)	55138.59	15	827078.9	253	3269.086
Average annual fee paid during internship per student (100% fee)	110277.18	127	14005202	253	55356.53
Average loan/borrowing per student (for students who feel loan/borrowing is burdensome)	107905.25	54	5826884	253	23031.16
Total	271012.9 (\$4096.94)				
Cost benefit analysis= Total average benefits ÷ Total average costs=363415.38÷271012.9=1.3409					

professional job location in British Columbia. The factors (broadly) were- community factors, workplace factors, relationship factors, financial factors, leisure factors etc. Danisha et al observed the major factors influencing job selection to be personal interest (66%) anticipated income (10%), family influences (9%), and reputation (11%). Our study also reports 'area of interest' to be the most influential factor to select a job (%=46.64%). It's a challenge for PharmD students that government authorities and many private pharmaceutical companies have not yet recognized the study program or the importance of CPS.⁴ Because of this, there are negligible jobs available for them especially in government sector. But 35.97% PharmD learners wanted to have a government job in our study. As cited in the literature, government authorities are advised to consider PharmD graduates for suitable positions⁴ Nearly 61% students in Danisha et al study⁷ wanted to fly abroad for pursuing the job because of higher salaries and unavailability of other clear career options in India while in our study the percentage was 23.72%. The reason for the significant difference between 2 studies (i.e. 61% vs 23.72%) is unknown.

Although more girls are studying, 84% of them drop out after graduation. Early marriages are one of the major reasons behind this scenario.²⁷ Considering this cultural bias, we had kept an option "marriage" for the question 'What would you like to pursue after PharmD?'. But interestingly we received 'zero' responses for that. It may be because of the divergence of opinions between the parents and the daughter i.e. the parents may pursue their daughter for marriage after PharmD, but she may be interested to make her career.

Danisha et al study⁷ illustrated nearly 3/5th students to be interested to pursue research after PharmD while we explored the percentage to be 20.16% (Full time PhD+Part-time PhD). Currently, educational opportunities are not completely established for PharmD's in India. But, the career after PharmD is quite entrenched in developed countries. As a result, nearly 1/10th students interested in proceeding with their education combined with job in India. Only 1 student opined for 'education in India' after PharmD whereas 8.70% learners wanted to fly abroad for higher education.

Western countries do offer specialty courses after PharmD such as oncology, cardiology, psychiatry, nuclear pharmacy etc. But such courses are not currently available in India.⁴ Still, 65.2% students in Danisha et al study⁷ showed interest to join such programs whereas in our study, 53.75% students reported the same. The specialization courses after PharmD must be established

in India, to overcome this issue. As far as educational opportunities are considered, more students wished to continue with part time PhD (12.65%) over full time (7.51%).

Logically, there may be 3 reasons for a student to choose a non-pharmacy career after PharmD; personal interest, poor awareness of the scope of PharmD or uncertainty of job/career opportunity in India. The last one has also been addressed in Danisha et al study.⁷ Ubaka et al. (from Nigeria)²⁸ and Danisha et al.⁷ found 4.7% and 8.6% students respectively, who wished to proceed with non-pharmacy career after graduation. We investigated the percentage to be 3.56.

Clinical pharmacist is considered to be the most suitable job for PharmD's. More than 30% individuals opted to work in clinical pharmacy set-up as per Danisha et al study⁷ whereas our study shows 61.26% respondents to be clinical pharmacist aspirants. Considering this, hospitals are advised to consider PharmD's for clinical pharmacist positions. Although industries/companies pay higher salaries that grow with experience/duration, only 22.13% PharmD's aspired to choose that as a job option in our survey (less than 10% in Danisha et al study⁷).

Sheaffer and colleagues²⁹ identified lower salaries as the primary deterrent in the variables impacting an academic pharmacy career choice. Similar condition exists in India about academicians; salary growth rates are comparatively lower in academics.⁴ We think that's why only 4.35% students desired to join academics in future. To resolve this, academicians should be considered for descent salaries.⁴

There are several Facebook groups involving PharmD students in India. A post entitled "MD (Doctor of Medicine) after PharmD" was there in few Facebook groups few months back.³⁰ According to the post, one can pursue MD after PharmD. We suspect this post as the motive behind few responses we received as "MD" for the question, "If allowed to learn, what kind of education would you like to pursue after PharmD?"

AACP 2015 survey¹⁷ reports the average amounts borrowed to finance PharmD education to be \$1,49,320 (median= \$1,50,000). Our study reports average loan/borrowing taken by a PharmD student to be Rs. 1,07,905.25/- (\$1631.22). As per Ahmad et al. study,²⁵ the average salary of a PharmD candidate was found to be Rs. 12,000 per month but we found it to be Rs. 24,835.35 (\$375.43) [i.e. 298024.22 (\$4505.27)÷12] per month.

As far as cost benefit analysis is considered, the PharmD degree seems to be 'beneficial' since the ratio (costs to benefits) was 1.34. It may be a good choice for prospective students.

Limitations and recommendations

General limitations

Since we sent the survey form through various means, we could not calculate the response rate. We couldn't find any database/system/authority in Indian scenario where we could get the students' contact details nationwide. Our survey doesn't represent the national layout. We couldn't approach every PharmD student in the country. We were able to analyze only few aspects related to career preferences of the students. Furthermore, we didn't conduct statistical analysis of the study. Many universities in western countries do have 'defined' policies, procedures and guidelines to be followed regarding the student surveys e.g. Duke University.³¹ Though the authors of this study, approached PharmD students by many means, they could not find an institute having 'defined' policy or guidelines to survey their students. This scenario slightly hampered the authors' approach and access to pharmacy institutes. Thus, it is recommended that Indian pharmacy institutes/universities should have 'defined' guidelines for the same (on the websites).

Limitations for economic assessments

Although we assessed several economic aspects of the student, the results may not be implementable or they cannot be used for predicting future earning/decision making for the career. Although the methodology used for calculating the average values is not a standard one but it does give valuable inputs to current Indian situation since no such studies/data are available. The averages calculated are not the arithmetic means but they are the crude estimates of the parameters.

In India, GPAT (previously GATE) is the national-level entrance examination for pursuing post-graduation after B. Pharm. If one cracks the examination, he gets the stipend of Rs. 12,000/- a month for 2 years after entering in the M. Pharm.³² As discussed in the literature,⁴ GPAT/GATE qualified PharmD (PB) students also deserve the stipend but in fact they don't get it. In the cost benefit analysis we conducted, the stipend for PharmD (PB) students was not evaluated. GATE/GPAT qualified PharmD (PB) students who are not getting the stipend would have been considered as the 'cost (loss)' but we couldn't analyze the same.

Since we had kept multiple options for the question, we were not able to assign the proper monetary value for the health insurance, though it's a 'benefit' for a student. Chisholm-Burns *et al.*³³ used 'Markov modeling' while conducting economic analysis of PharmD degree and career as a pharmacist. But here in our study, we couldn't

analyze such things. The salary grows with experience but for cost-benefit analysis, we have taken the salary for a recent graduate only. We couldn't conduct the cost-benefit analysis on long-term basis. We could not ask traveling-related question precisely. Asking about number of trips per year and money spent for every trip to hometown would have given a better picture. Therefore, we are not very sure that 'all' the students have considered all their trips to hometown in one academic year in our survey. Moreover, we have considered the expenses for hometown students as 'zero' which is impractical. A student may actually spend money to travel to the college even in the hometown. E.g. city-bus charge, petrol expenses for 2-wheelers etc. Asking open ended questions would have given some new inputs in the study, but we couldn't ask the same. We couldn't compare the cost benefit analysis with other fields in the country. E.g. engineering, nursing etc.

CONCLUSION

To the best of our knowledge, this is the first study in India to determine financial aspects of the PharmD students. The cost benefit analysis reflected that pursuing PharmD degree in India seems to be beneficial. Although not perfectly implementable, this study definitely provides valuable future directions for policy makers, the PharmD students and forthcoming researchers. Further studies are needed to explore the financial and career choices of the students.

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SUMMARY

- Although nearly 10 years have passed after starting, the opinions about PharmD program are still cloudy. Therefore, we aimed to determine economic and career aspects of Indian PharmD students. We also planned to conduct cost benefit analysis of the data. Regarding this, we developed, validated and sent an online questionnaire assessing economic and career sides of PharmD students in the country. Total 253 PharmD students responded to the survey from different states. Majority of students were from private institutes and were females. The average values of some parameters were calculated by multiplying the medians of the range and number of responses; then the sum was divided by 253 (total number of responses). The selected important average values were as follows (in INR)- annual fee-110277.18, stipend received during internship- 334.04, while monthly living expenses- 5899.66. The cost benefit analysis has shown the course to be beneficial showing the ratio to be 1.34. To the best of our knowledge this is the first study of its kind. Further studies are needed for better assessment of educational aspects of PharmD.

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