

Attitudes and Expectations of Graduating Canadian Medical Students Toward Their Future

Step 1: Dalhousie University Medical School

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With the ongoing climate changes in Canadian medical practice, there is some concern that this country will be unable to provide the potential lifestyles that its future physicians will demand. This study aims to take the first step in the process of gathering information on the attitudes and expectations of graduating Canadian medical students for the purposes of developing a basis against which to compare predictions for the future. Dalhousie University was used as the starting point for this study and numerous insights were gained into the factors that influence the decisions made by the students at that school. The next logical step is to apply the survey to graduating classes at all Canadian medical schools. It is hoped that the knowledge gained from this survey about the expectations of Canadian medical students can be compared both to current working conditions for practicing physicians and to predicted future practice patterns. Addressing discrepancies between expectations and realities will improve retention and career satisfaction among Canadian physicians.

INTRODUCTION

In Canada today, the climate of medical practice is continually changing. This is occurring for a number of reasons, but societal, technological, economic, political, environmental, ethical, and educational factors all have a role to play¹. Not least among these are the financial considerations that are so much in the minds of many of this country's medical students. Debt loads are continually increasing, while the earning power of physicians in this country is dropping². These as well as many other external factors are combining to play a major role in the specialty choice of today's medical students.

While the practice environment for new Canadian physicians is changing, so too are the needs of the soon-to-be doctors in our country. There is a greater and greater influence of lifestyle considerations for these people. New medical graduates often have lifestyle expectations that differ greatly from those of their predecessors³.

With the ongoing changes in Canadian medical practice such as these, there is some concern that, in the near future, this country

may not be able to provide an environment that new physicians will deem acceptable. Expectations about the quality of life for a new physician may cause more and more Canadian doctors to migrate to other parts of the world (e.g. the U.S.), where the conditions may be more favorable. In fact, in recent years there has been a relative increase in the movement of physicians to the United States and more Canadian students have been applying to American medical schools⁴. Situations such as these have prompted the need for a serious look at the factors that may influence the future situation of Canadian medical practice.

One of the main purposes of this study was to begin the process of gathering data on current expectations and attitudes of Canadian medical students through the use of an email survey. The areas of interest included in the survey are: specialty choice, income, family / leisure time, control over schedule, responsibility, stress / pressure, job security, practice location, retirement age, debt load, and demographics. Once this process has been completed, it is intended that this information will be compared to predictions concerning the potential lifestyles that this country will be able to offer its new physicians. This is so that potential discrepancies between working conditions and expectations can be identified as soon as possible.

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As with all major undertakings, these first steps are as much a learning experience as a foundation for further progress. The medical school at Dalhousie University was chosen as the first place to gather data and to refine the data collecting techniques. This paper describes the steps taken in the administration of the questionnaire used to survey graduating medical students at this school, the results attained from this effort, and a discussion of how to continue with the study in light of these results. It is expected that the lessons learned here will be applied to efforts to survey the remaining English-speaking Canadian medical schools. A reliable reflection of the current attitudes and expectations of English-speaking Canadian medical students will be useful in determining potential steps to be taken to improve the state of medical practice in Canada.

METHODS

The main tool used for this study was an email questionnaire. The steps followed for the creation and administration of this questionnaire were, as reasonably as possible, those of the *Dillman Total Design Method*¹. The main purpose for using this method was to attempt to maximize response rates, thus enabling a better representation of the attitudes and expectations of the general population of graduating Dalhousie medical students.

During the pilot study involving a small group of five potential respondents, it was found that the questionnaire took approximately six minutes to complete and, for the most part, the multiple choice options provided for each question were adequate. The questionnaire was also submitted to colleagues and potential users of the data for input on design and usefulness.

Minor changes were made to the questionnaire following the pilot study and then the final version of the questionnaire was emailed to all members of the fourth year class. The original mailing was followed by a series of reminders at one-week intervals. A similar method of follow-up has been shown to more than double response rates in most instances⁵. This study showed a return rate of approximately 19% after the original mailout. After the first follow-up, the response rate rose to just under 50%. The final follow-up consisted of a personal visit to the fourth-year class with a hard copy of the questionnaire. This resulted in a final response rate of 60%.

Once the surveys were received, the responses were input to a spreadsheet. Before statistical analysis was begun, the data were verified for correctness and the original email surveys were deleted as promised by the consent form that preceded the questionnaire in each mailout to the potential respondents.

This research was approved by the research ethics board of Dalhousie University.

Statistical Tests

For each potential response in the questionnaire, a number of statistical tests were performed in order to analyze the data. For each question, the modal response and the percentage of respondents choosing the modal response was calculated. In addition, for the questions with graded responses, the median, mean, and standard deviation were calculated. Due to length constraints, this data has not been included here but is available from the author upon request.

Response Rates

Although there were eighty-three students in the fourth year class at Dalhousie University during this study, not all were included in the sample. Five of the students were from Malaysia, and were therefore ineligible to do their postgraduate training in Canada. As a result, it was felt that including these students in the survey was not appropriate as they would not have an effect on the future situation of medical practice in Canada. As well, one non-Malaysian student responded to the mailout expressing regret in his inability to complete the questionnaire before the due date. He too was dropped from the sample, bringing the total number of potential respondents down to seventy-seven. Of those seventy-seven, forty-six questionnaires were completed and returned in time for the writing of this report. The unreturned questionnaires were classified as refusals. The response rate was therefore calculated as follows:

$$\begin{aligned} \text{Response Rate} &= \frac{\# \text{ Returned}}{\# \text{ in sample} - (\text{noneligible} + \text{nonreachable})} \times 100 \\ &= \frac{46}{83 - (5 + 1)} \times 100 = 60\% \end{aligned}$$

Demographics:

Of the forty-six respondents, twenty-four were males and twenty-two were females. Not all of the respondents completed every question in each questionnaire, so the denominator varied to a maximum of forty-six for calculations on individual questions. Of the respondents, 69% were between the ages of twenty-four and twenty-six, while an additional 24% were between the ages of twenty-seven and twenty-nine. All were expecting to graduate in 1999 and all were Canadian citizens. Eighteen percent were married while the remaining 82% were single at the time of the study. None of the respondents indicated that they had dependents, although 73% expected they would have at least one dependent while practicing medicine.

Career Choice:

The first question posed in the questionnaire sought the respondent's choice of career. Results showed that 54%

Table 1: Variables Relating to Career Choice

Category	Selected Responses	Choice of Career			Correlation
		Family Practice	Clinical Medicine	Surgery	
Age at Graduation	>26	29%	57%	14%	-0.29
	24-26	10%	52%	32%	
Debt at Graduation	none	0%	67%	33%	0.05
	\$1 - \$10,000	50%	25%	25%	
	\$10,001 - \$20,000	0%	0%	0%	
	\$20,001 - \$40,000	18%	64%	18%	
	\$40,001 - \$60,000	13%	63%	25%	
	\$60,001 - \$80,000	17%	50%	33%	
> \$80,000	11%	56%	33%		
Marital Status	Single	11%	54%	30%	
	Married	38%	50%	13%	
Desired Responsibility	Moderate	15%	62%	23%	0.04
	Great deal	16%	55%	29%	
Desired Stress/Pressure	Very Little	0%	100%	0%	0.04
	Moderate	18%	53%	29%	
	Great deal	0%	50%	50%	
	Undecided	0%	100%	0%	
Desired Income	\$40,001 - \$80,000	0%	100%	0%	0.41
	\$80,001 - 160,000	25%	75%	0%	
	\$160,001 - 250,000	18%	41%	41%	
	> \$250,000	0%	20%	80%	
Desired Number of Hours per week worked	>20	0%	100%	0%	0.10
	21 - 40	33%	67%	0%	
	41 - 60	14%	59%	28%	
	61 - 80	25%	38%	38%	
	81 - 100	0%	0%	100%	
	> 100	0%	100%	0%	
Desired Control Over schedule	Moderate	25%	50%	25%	0.09
	Great Deal	5%	62%	33%	

were destined for a clinical medical specialty, 26% for surgical specialties, 15% for family practice, and 4% for a laboratory specialty. In an attempt to find links between career choice and certain other aspects of the respondents, comparisons were made to a number of variables, including age, debt load, marital status, number of dependents, and desired levels of family / leisure time, responsibility, stress / pressure, income, and control over schedule. This career choice data is compiled in *Table 1*. Please note that the percentage values shown correspond to their particular row.

Working Location:

Desired location of practice and desired living location were compared with the size of the respondent's home community. The degree of correlation between these categories was evaluated using correlation coefficients. These results are presented in *Table 2*.

For the purposes of this study, a correlation was not

considered strong unless the corresponding correlation coefficient was greater than 0.6. Those that fell in the range of 0.3 to 0.6 were considered moderate, and anything less than 0.3 was considered to be indicative only of a weak correlation. None of the correlation coefficients calculated in this study indicated a strong correlation and a number of correlation coefficients proved to be negative, indicating that as the values in one category rose, those of another fell. Again, these negative correlations could be classified as strong, moderate, or weak.

Gender Variations:

Many responses were also compared on the basis of gender. For instance, of the 54% of respondents headed for a clinical medical specialty, 68% were females. Of the clinical medical specialties, internal medicine was the most popular choice, picked by 23% of females and by 17% of males who chose a clinical medical specialty. Anesthesia and psychiatry were the next most popular choices, with each claiming 20%. Of the surgical specialties, general surgery

Table 2: Variables Relating to Desired Location

		Desired Working Town Size				Desired Proximity to a Metropolitan Centre (km)					
		< 10k	10 - 50k	50 - 200k	> 200k	Metro Area	< 50	< 100	< 200	no pref	> 200
Home	< 10k	13%	25%	0%	25%	13%	13%	25%	25%	13%	0%
Town	10k - 50k	0%	11%	56%	22%	22%	22%	0%	22%	22%	0%
Pop.	50k - 200k	0%	0%	54%	23%	15%	15%	8%	38%	15%	0%
	> 200k	0%	13%	33%	40%	20%	27%	27%	20%	7%	0%
Correlation Coefficient:		0.07				-0.13					

DISCUSSION

and orthopedic surgery were the two most popular choices, achieving 33% and 25% of the popular choice, respectively. Three quarters of those who picked surgery were males.

Factors Influencing Career Practice Decisions:

Finally, the respondents were also asked to rank the top five factors influencing their career practice decisions. This data was compiled and the five most frequent responses are presented below in *Table 3*.

A tremendous amount of data was collected based on the survey results. Following the lead set in the *Results* section, only the most remarkable and / or pertinent results will be discussed here.

Response Rate:

Unfortunately, the response rate for this survey, at 60%, was lower than originally hoped. It is claimed that the Dillman Total Design Method will consistently produce response rates of 75 – 80% if used properly⁵. Many other surveys using this method have given even better rates¹. Probably one of the biggest reasons for the lower response rate in this study was that the Total Design Method was not followed exactly, with perhaps the greatest discrepancy being in the method of follow-up. In this study, only two follow-ups were made after the original sample had been sent out, unlike the three follow-ups that Dillman suggests.

Another discrepancy and possible cause of the lower response rate was the fact that the questionnaire was sent using email. This may not have made much of a difference in many cases, but target population was not typical. Fourth year medical students receive many emails and, as a result, may only read those that they deem most relevant to their situations. As well, because of their busy schedules in the hospitals, they often do not spend much time at the school, where the email is normally accessed. Another possible factor is that some may have been on external rotations during the survey period and consequently unable to complete the questionnaire.

Finally, the time allowed for the return of the sam-

ples was only about three weeks from the original mailout. Dillman suggests that the third follow-up be sent on the seventh week. This allows more than two months for the receipt of completed questionnaires from the date of the first mailout. These factors may have combined to limit the response rate to the level observed.

In light of these limiting factors, a response rate of 60% should not be considered poor. In fact, if either of these factors had not been present, that is, if more time was available for the implementation of the questionnaire or the sample population was other than busy fourth year medical students, it is suspected that the response rate could have been significantly higher.

Responses for Individual Categories:

Thirteen main categories were surveyed in the questionnaire. These included: career choice, stress / pressure, responsibility, job security, income, debt load, family / leisure time, control over schedule, retirement age, practice location, specialty choice, ranking of influential factors, and demographics. The focus of this discussion will be the tables presented earlier in the *Results* section.

Career Choices:

A number of factors have been shown to influence a medical student's choice of career. Those analyzed here include age at graduation, debt load, marital status, desired responsibility, desired stress / pressure, desired income, desired

Table 3: Top Five Factors Influencing Career Practice Decisions

Factor	Frequency as One of the Top 5 Choices
1. Family/Leisure Time	15.2%
2. Type of Work	13.9%
3. Level of Responsibility	10.4%
4. Level of Stress/Pressure	10.0%
5. Level of Income	8.7%
6. Control over Schedule	8.7%

number of hours worked per week, and desired level of control over schedule. These results can be found in *Table 1*.

AGE AT GRADUATION AND MARITAL STATUS

It has been shown that, because of familial responsibilities, older graduates and married graduates are more likely to pursue family medicine². This was seen in the data obtained in this study as well. Thirty-eight percent of the married respondents chose family practice, whereas the rate was only 11% for single respondents. As well, graduates older than twenty-six picked family practice 29% of the time and those aged 24 – 26 only picked this career path 10% of the time.

DESIRED FAMILY / LEISURE TIME AND RESPONSIBILITY

Both desired amounts of family / leisure time, measured in this study by desired number of hours worked per week, and desired level of responsibility have been shown to moderately influence career choice³. In fact, nearly 63% of respondents in this study said that lifestyle considerations were at least as influential as subject matter in their career choice. Also, this category was indirectly rated the third most influential factor on career choice by them. Few would disagree that the availability of family / leisure time is a major component of a controllable lifestyle. As well, desired level of responsibility occurred more often than any other factor in *Table 3*. Evidently, these variables have a considerable influence on career decision making.

DESIRED LEVEL OF STRESS / PRESSURE AND CONTROL OVER SCHEDULE

Both desired levels of stress / pressure and control over schedule have been shown to have a minor influence on career choice in at least one other study. However, it is interesting to note that respondents ranked these two variables fourth and fifth highest in their decisions (see *Table 3*). It would seem then that, at least to the respondents in this study, these factors play more of a role than the literature would otherwise lead us to believe.

INCOME

Desired level of income ranked number five in *Table 3*. In other studies, though, it has only proven to influence career choice in a minor way. However, when coupled with an increasing debt load, the reason for such a high ranking may become clearer.

DEBT LOAD

Debt load is one of the most difficult variables to analyze. In some studies, it has been found to be a significant factor when it is high, and therefore causes the student a considerable amount of anxiety^{8,1}. It is a new trend that students are more likely to opt for higher paying careers in these instances, despite the fact that the residencies for these specialties tend to take longer². This certainly seemed to be true in this study as more people chose clinical medicine and

surgery, which typically lead to higher incomes than family practice, as their levels of debt rose.

In another study, however, less than four percent of physicians said that debt had a major influence on specialty choice³. About half of those who indicated that it did, though, also indicated that they had foregone some training because of it. This tends to support the idea that the pursuit of greater training with increased debt load is a relatively new trend. It is expected that this trend will continue due to the fact that debt loads are increasing while physicians' incomes are either remaining stagnant or are being cut⁴.

It should be noted that the results seen in this study may not be typical of all medical schools across the country. One of the major reasons for this is that Dalhousie had the second highest medical school tuition in the country (after Memorial University of Newfoundland) in 1996 – 1997¹². If it is indeed the case that schools with higher tuition fees tend to produce less family practitioners due to the increased levels of debt that result, one would expect that, in the near future, Ontario schools will see comparable drops due to the recent deregulation of tuition fees in that province. This remains to be seen.

Incidentally, the median debt load in this study was somewhere between \$40,000 and \$60,000 and most people claimed that their debt caused them at least a moderate level of anxiety. It has also been shown that debt has a significant influence on students with children (reference). But, since none of the respondents in this study had children, this factor can not be commented on here.

WORKING LOCATION

Two of the questions asked of the respondents were the population of town in which they desired to work and the proximity to a metropolitan center that they wished to live. In an attempt to understand the reasons for their choices, these responses were correlated with the population of their hometowns. It was found that only a weak correlation existed between these variables, with those whose hometown was relatively large being only slightly more likely to choose to work in and live close to a metropolitan center. The largest proportion of people stated that they would prefer to work in a city of between 50,000 and 200,000 people and live within one hundred kilometers of a metropolitan center. The proportion of people who chose these responses were 40% and 28%, respectively.

GENDER VARIATIONS

A number of variations were seen between males and females in the sample. Most notable among these were in the categories of career choice, income, debt load, and practice location. Each will be treated separately in this section.

CAREER CHOICE

Interestingly enough, there seemed to be some variation between males and females in the choice of careers. While both groups picked clinical medical specialties more often than any other career path, the males were much more likely

to pick an alternative specialty than were females. In fact, a much larger proportion of those who chose a surgical specialty were males (75%).

PRACTICE LOCATION

Another variation seen between males and females in this study was the desire to spend time practicing medicine outside of Canada. While most males (57%) said that they did not plan to spend any time practicing medicine in another country, only 32% of females stated that they had no plans of practicing medicine outside of Canada. The correlation coefficient for these variables was 0.44, or moderate.

DEBT LOAD

Males were more likely to have accumulated a higher debt load than were females. A large proportion of males fell into the debt range of \$40,000 - \$60,000 whereas many females fell into the lower range of \$20,000 - \$40,000. The correlation coefficient for this relation was 0.22.

INCOME

The greatest discrepancy between male and female expectations came in the category of expected level of income. Males were most likely to choose a level of income ranging from \$160,001 - \$250,000 whereas females were most likely to opt for the lower income range of \$80,001 - \$160,000. The correlation coefficient of 0.33 for this relation showed a moderate correlation between these variables. The reason for this may be due in part to the trend we saw earlier of higher debt loads corresponding to the pursuit of higher-paying specialties. Since there does not seem to be any information in the literature concerning this point, it is difficult to either confirm or deny this suspicion.

CONCLUSIONS

As stated above, this study represents the first step in the process of gathering data on the attitudes and expectations of graduating Canadian medical students toward their future. As a first step, it was relatively successful in achieving its goals. For instance, the survey was constructed, piloted, and refined to the point where it can be used as an effective tool for use in further steps. As well, the response rates were high enough to allow for relative reliance on the data obtained for Dalhousie Medical School as a reflection of the entire class of 1999. These results, however, cannot be used to draw conclusions on the characteristics of the other fifteen Canadian medical schools as situations in different provinces and, indeed, at different schools within a province may vary dramatically (e.g. with tuition and/or demographics). It is therefore necessary that representative samples be obtained from each school.

In future steps, it is recommended that more time be allotted for response to the survey than in this step. This would allow more of a chance to achieve greater response rates, thereby increasing the reliance on the data. As well, despite suspicions that certain variables were quite closely

related, the correlation coefficients calculated with the data obtained here are not extremely high. It is suggested that more attention be given to the construction of some of the questions in order to enable a more effective correlation analysis for the remaining medical schools.

This is a study with potentially important implications for both the physicians already practicing medicine in Canada and those who will soon be entering the profession. It has been a learning process and some helpful insights have been gained with this step. The next step is to use the knowledge gained here to make appropriate changes to the process in order to ensure that the potential usefulness of this effort will be maximal.

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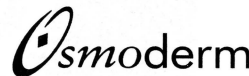


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