

Expenses and Income Sources of Dental Students

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THE NUMBER of dentists in active practice in the United States rose by almost 5,000 between 1930 and 1955. Despite this numerical gain, the supply of dentists in proportion to population continuously declined. In 1930, there was 1 dentist for every 1,728 persons in the Nation; by 1955, there was 1 dentist to 2,168 persons. A continuation of this adverse trend through the next 20 years will result in the most unfavorable dental manpower supply this country has had since the beginning of the century.

The failure of the dental manpower supply to keep up with population growth has occurred during a period in which dental schools have been training the largest numbers of students in their history. In the 10-year period between 1940 and 1950, enrollments increased by more than 50 percent, to reach an average of almost 12,000 students a year. Enrollments have continued to rise in each year since 1950 but not fast enough to reverse the pattern of shortage. They must be drastically increased to provide enough dentists to care for a larger population and to meet the rise in the level of individual demand for care which is expected to accompany population growth.

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The need for raising dental school enrollments poses some serious financial problems for the schools, for the students, and for dentistry as a whole. A study conducted in 1952 (1) revealed that dental schools had large backlogs of equipment and building needs which could not be met because of a lack of sufficient funds. Increases in tuition had done no more than keep pace with postwar inflation. A further rise in tuition would provide some relief for the schools, whose financial difficulties have been aggravated by expanding enrollments. Administrators, however, fear that substantial increases in tuition would inhibit enrollment, and therefore hesitate to place further financial obstacles in the way of qualified students.

That dental education is already a very expensive undertaking for the student is shown in a recently published study of the financial problems of dental students conducted by the Council on Dental Education of the American Dental Association and the Division of Dental Resources of the Public Health Service (2). This investigation, together with the earlier study on the financial status of the schools, provides a foundation for the planning of effective corrective measures which will alleviate the schools' financial problems. It can also serve as a guide in the reappraisal of tuition charges and the establishment of expanded scholarships and other programs of financial aid for students.

Survey Methods

In May 1954, the ADA Council on Dental Education, with the cooperation of dental

school deans, distributed questionnaires to the 12,516 students enrolled in the country's 43 dental colleges. Students were asked to estimate their expenditures for the 1953-54 school year and to designate the source of funds used to meet these expenses. They were also asked to supply information regarding personal and family characteristics, types of living arrangements, and proposed sites of future practice.

Survey schedules were returned by all of the 26 privately financed schools and by 13 of the 17 publicly financed schools. Enrollments in these 39 colleges amounted to about 90 percent of the entire student body. Of the 4 nonreporting public schools, 2 were located on the Pacific coast and 2 in the North Central States. Schedules were completed by 87 percent of all private school students and 58 percent of all public school students, for a total participation of 76 percent. The data pertaining to the characteristics of students and to their financial problems are summarized here.

A Changing School Population

The present dental school population is in a phase of transition. The veteran enrollments marking the immediate postwar period are now on the decline, and as a result there has been a lowering of the average age level of dental students as well as a decrease in the number of married men among the student population.

Despite the downward trend in average age, today's students are still older than their prewar counterparts and are more likely to be married. They enter school with more pre-dental education than their predecessors. The majority are from families whose annual incomes are well above the national average, and their fathers are likely to be in professional or managerial occupations.

The occupational background of parents and the level of family income apparently are factors influencing the choice of dentistry as a career. One in every nine students has a dentist father; nationally, 1 in every 500 men in the labor force is a dentist. Only about one-third of all dental students are from families with annual incomes of less than \$5,000, an income group represented by four-fifths of the families in the United States.

Among dental students from low-income families, the proportion of veterans, who are eligible for financial assistance under the GI bill, is relatively higher than the proportion of nonveterans. The GI bill has proved to be a patent factor in stimulating enrollments of qualified students from low-income groups.

Cost of Dental Education

In estimating expenditures for the 1953-54 academic year, dental students were asked to list both school and living expenses. School expenses included amounts spent either by the student or on his behalf for tuition and fees, textbooks, instruments, equipment and supplies, organization dues, and other related expenses. Living expenses covered sums paid for rent, food, clothing, recreation, personal maintenance, health services, travel, and miscellaneous expenses of the students and any dependents in their households. Students living with parents or friends listed only their out-of-pocket expenses for these items.

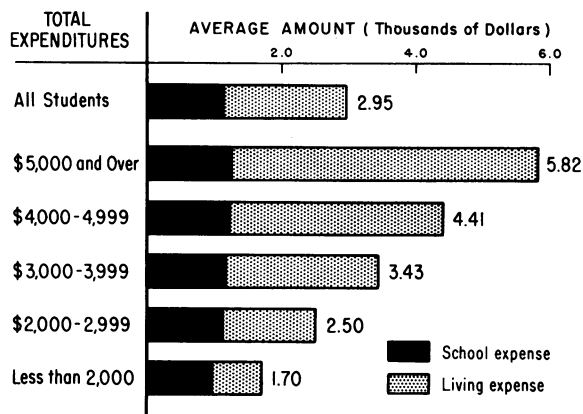
Annual expenses reported by the different categories of students in each of the four classes in school in 1953-54 were projected as 4-year totals in order to estimate the complete cost of a dental education.

A review of these estimates shows that the cost varies from student to student and from school to school. The differences in the levels of total expenditures are largely the result of variations in living expenses, which range over a wide scale of values while school expenses fluctuate only moderately. The highest average school costs reported by any category of students are only one-fourth greater than those at the lowest level, but the highest average living expenses are six times as great as those at the lowest level (see figure). The most striking differences in living expenses are those associated with marital status and living arrangements, factors having no appreciable effect on the levels of school expense (table 1).

School Expenses

For the student body as a whole, the average cost of 4 years in dental school was \$11,814. Of this amount, \$7,349 covered living expenses,

Average expenditure of dental students, 1953-54.



and \$4,465, or 38 percent, was charged to school expense. Tuition and fees represented the largest item of school expense, accounting for more than half of the total. Next in importance came equipment and supplies, for which the average student spent almost a third of his school funds. Books accounted for less than 7 percent, and the remainder was spent on such items as fraternity dues and examination fees.

School expenses were rarely distributed evenly over the 4 college years. In the majority of reporting schools, expenditures reached their peak in the sophomore year and then declined; in many cases, school costs in the senior year were no more than half the amount recorded in the peak year. This uneven distribution was generally caused by the timing of major purchases of equipment and supplies. Some students substantially reduced total school expenses by renting, rather than purchasing, much of the needed equipment.

School costs in private schools were greater than those in public schools. Most of the difference was attributable to charges for tuition and fees, which were 45 percent higher in private colleges. In addition, the equipment, supply, and book bill was higher for the private school student.

There were also regional variations in the levels of school expenses. In the Northeast, where tuition and fees were highest, the student spent \$5,113 over 4 years. School expenses averaged \$4,842 in the West, where expenditures for tuition and fees were below the northeastern level, but equipment and supplies were

higher. Average expenditures were \$4,241 in the South and \$4,122 in the North Central States. Tuition and fees were slightly lower in the South than in the North Central States, but equipment and supplies cost more.

Living Costs

Since living expenses amounted to 62 percent of the average student's budget, they were much more important than school expenses in determining the total cost of a dental education. Within the framework of living costs, food and housing required the largest outlays, with food accounting for one-third and housing for one-fifth of all expenditures. Personal maintenance and recreation were other large items, constituting one-fourth of the budget. Health and medical care cost comparatively little, averaging about 3 percent for all students, and many of them failed to list it at all.

Unlike school expenses, living costs increased progressively throughout the 4 years. The upward trend resulted from a combination of gradually expanding expenditures by both married and single students and a progressively larger proportion of married students in each of the higher classes.

Living costs, like school costs, tended to be higher for private school students. The exception to this pattern appears to be the single

Table 1. Average 4-year expenditures of dental students, 1953-54

| Category of student and type of school | Number of students | Average expenditures | | |
|--|--------------------|----------------------|----------|----------|
| | | Total | School | Living |
| All students..... | 9, 521 | \$11, 814 | \$4, 465 | \$7, 349 |
| Private..... | 6, 777 | 12, 037 | 4, 780 | 7, 257 |
| Public..... | 2, 744 | 11, 262 | 3, 682 | 7, 580 |
| Married..... | 4, 165 | 14, 452 | 4, 410 | 10, 042 |
| Private..... | 2, 771 | 14, 923 | 4, 761 | 10, 162 |
| Public..... | 1, 394 | 13, 510 | 3, 712 | 9, 798 |
| Single, away from home..... | 3, 825 | 10, 341 | 4, 428 | 5, 913 |
| Private..... | 2, 680 | 10, 814 | 4, 754 | 6, 060 |
| Public..... | 1, 145 | 9, 237 | 3, 660 | 5, 577 |
| Single, at home..... | 1, 531 | 8, 295 | 4, 697 | 3, 598 |
| Private..... | 1, 326 | 8, 426 | 4, 862 | 3, 564 |
| Public..... | 205 | 7, 448 | 3, 633 | 3, 815 |

student who lived at home while attending dental college, presumably because somewhat smaller shares of living costs were reported as expenditures.

Regional variations in living costs did not affect all categories of students in the same way. Costs were highest in the West for the married student (\$10,626) and the single student living away from home (\$6,203). The South was most expensive for the single student living at home (\$4,146).

The greatest variations in the levels of living expense are the result of marital status and housing arrangements, and for this reason the cost involved in seeking a dental education is much greater for the married student than for the single student, and the single student away from home has more expense than the student who lives with his parents.

The Married Student

At the time of the study, about 44 percent of the students were married, and nearly half of these had children. The proportion of married students increased progressively from 31 percent of the freshman class to 63 percent of the seniors. Since marital status is associated with age, it is not surprising that relatively more veterans were married than nonveterans. Two-thirds of the veterans in the freshman class were married; by the senior year, the proportion was 3 out of 4.

Among nonveterans, one-fifth of the freshmen were married; the proportion increased to 50 percent by the senior year. The fact that so many of the nonveterans are married men is an important factor in the future planning of housing facilities. Although the proportion will decline with the withdrawal of the veterans from campus, the number of married students is likely to remain well above the pre-war level and perhaps at the current figure for nonveterans. Schools should therefore plan for a relatively large proportion of married students as a permanent part of dental school enrollments.

For the married student, the total cost of 4 years in school averaged \$14,452. His school expenses amounted to \$4,410, a figure very close to the all-student average. However, living

expenses, which totaled \$10,042, were more than \$2,500 above the figure for all students, and over \$4,000 higher than the amount spent by single students living away from home. Most of the added expense could be traced to the higher cost of food and lodging.

Seven out of eight married students had established their own home either in houses or apartments, and the cost was two and one-half times as great as that for single students away from home. Food bills were from 25 to 50 percent higher. Purchases associated with furnishing and maintaining a home resulted in miscellaneous expenditures 4 times as great as those of the single student.

The presence of children in the home did not bring any substantial increase in overall costs for the married student, although certain differences in the allocation of expenditures developed. Where there were no children, the average cost of housing was \$2,479, or about 25 percent of all living expenses, and food purchases required \$2,637 (27 percent). For the student with children, food bills rose to \$3,259 (32 percent) and less was spent for housing (\$2,354 or 23 percent). The presence of children meant larger outlays for health and medical care, which rose to \$592, while the childless student spent only \$313. The added cost for health services for the student with children was offset by his lower expenditures for personal maintenance and recreation. Because of this tendency to meet higher expenses in one area with lower expenses in another, total living costs for the married student with children averaged only \$444 more over 4 years than those of the student who had no children.

The Single Student

Fifty-six percent of all dental students were single. One out of four of them lived at home while attending school, and by doing so substantially reduced the cost of their education. The remaining 75 percent had accommodations in dormitories and fraternity houses on the campus or in rooms and apartments nearby.

The student living away from home had total expenditures averaging \$10,341, and since this amount reflects essentially the total cost of all items of school and living expense, it pro-

vides a more accurate measure of the amount a single student pays for his education than would an average for all single students. His school expenses averaged \$4,428 and were slightly higher than those of the married student, but his living costs, which totaled \$5,913, were 41 percent less. Food bills were \$2,115, and, although this was far below the amount reported by the married student, it represented a larger share of total expenditures (36 percent). Housing was also cheaper, averaging \$1,063 (20 percent). He was able to devote a third of his budget to personal maintenance and recreation, dividing nearly \$1,800 between the two. Payments for health and medical care averaged only \$77 for the 4 years.

The cost of education for the single student who lived with his parents was \$8,295, the lowest average recorded for any category of students. For this student alone, school expenses were greater than living costs. School expenses, which averaged \$4,697, were also higher than those of other students, primarily because a relatively larger proportion of students who lived at home were enrolled in private schools and paid more for tuition and fees. However, his living costs were not only much lower than those of other students but were distributed in a different way. The total living expenditures

for 4 years were \$3,598, or about \$300 more than a married student with children paid for food alone. The largest item of living expense was recreation, which cost \$900 (25 percent) while his out-of-pocket expense for food and lodging combined was \$960 (27 percent). He devoted a larger share of his budget to personal maintenance than other students did.

Source of Student Income

The dental student drew most of the money required to finance his education from sources within his own family. He supplemented these amounts with funds from other sources—scholarships, loans, or benefits available under the GI bill. This was true of both the married and the single student, though they differed in the extent to which they utilized each source (table 2).

The married student relied more heavily on his wife's earnings than on any other type of assistance. If there were no children in the family, her earnings covered more than half of all his expenses. Most of the remainder came from his own earnings and personal savings and from sums supplied by his parents. The presence of children in the household made drastic changes in this financial pattern. His

Table 2. Distribution of average 4-year expenditures by source of funds, 1953-54

| Student category | Number of students | Total | Source of funds | | | | | | | | |
|---------------------|--------------------|-----------|-----------------|----------|---------------|------------------|--------------------|---------------|--------------|-------------|-------|
| | | | Par-ents | Sav-ings | Own earn-ings | Wife's earn-ings | Vet-eran bene-fits | Schol-arships | School loans | Other loans | Other |
| Amount | | | | | | | | | | | |
| Married: | | | | | | | | | | | |
| With children..... | 2, 021 | \$14, 631 | \$3, 027 | \$2, 551 | \$2, 252 | \$3, 645 | \$1, 796 | \$120 | \$110 | \$705 | \$425 |
| Without children... | 2, 144 | 14, 281 | 2, 118 | 1, 843 | 1, 274 | 7, 546 | 825 | 108 | 54 | 269 | 244 |
| Single: | | | | | | | | | | | |
| Away from home... | 3, 825 | 10, 341 | 6, 094 | 1, 941 | 1, 073 | ----- | 295 | 145 | 64 | 465 | 264 |
| At home..... | 1, 531 | 8, 295 | 4, 304 | 1, 933 | 1, 183 | ----- | 201 | 178 | 25 | 223 | 248 |
| Percent | | | | | | | | | | | |
| Married: | | | | | | | | | | | |
| With children..... | 2, 021 | 100. 0 | 20. 7 | 17. 4 | 15. 4 | 24. 9 | 12. 3 | 0. 8 | 0. 8 | 4. 8 | 2. 9 |
| Without children... | 2, 144 | 100. 0 | 14. 8 | 12. 9 | 8. 9 | 52. 8 | 5. 8 | . 8 | . 4 | 1. 9 | 1. 7 |
| Single: | | | | | | | | | | | |
| Away from home... | 3, 825 | 100. 0 | 58. 9 | 18. 8 | 10. 4 | ----- | 2. 8 | 1. 4 | . 6 | 4. 5 | 2. 6 |
| At home..... | 1, 531 | 100. 0 | 51. 9 | 23. 3 | 14. 3 | ----- | 2. 4 | 2. 1 | . 3 | 2. 7 | 3. 0 |

wife's earnings then provided only a quarter of his expenses. To make up the deficit, the student dipped deeper into his savings, and the amount he earned while attending school almost doubled. His parents increased their contribution by nearly a third, and he added to this by almost tripling the amounts he borrowed. Aid received from scholarships also increased.

Both categories of single students received most of the money which paid for their education from their parents and supplied the remainder from personal savings and earnings. Parents supplied about 59 percent of funds for the student away from home and 52 percent for the student living at home. However, since the student at home was instructed to list only his own out-of-pocket expenses, the aid this student actually received from his parents would generally be much greater than these percentages indicate.

Veterans' benefits comprised only 6 percent of total funds for all students, but they made a substantial contribution to the funds of students who received them. The average amount received from this source by different categories of students varied; for the married veteran with children the benefits covered a sixth of his total costs, and for the single veteran who lived with his parents, they covered about a seventh.

Scholarships and loans were other sources of funds which were of more importance to individual students than they appear to be when averaged for an entire category of students, and the amounts obtained from them were greater for married students with children than for any other group.

Indebtedness

In spite of the substantial financial assistance received from various sources, 57 percent of all dental students were in debt by the time they were graduated. Fourteen percent owed \$6,000 or more, 23 percent owed between \$2,000 and \$5,999, and another 20 percent, amounts less than \$2,000. The size of the indebtedness rose progressively over the 4 years in school, with

the average debt per student increasing from \$2,193 to \$4,230 between the freshman and senior years.

Conclusion

The cost of a dental education is so high that no category of students, married or single, was able to provide as much as half of total expenses from personal savings and earnings. Most students depended upon wives or parents for the major portion of their funds, and many of them went deeply in debt. For some students, particularly for those from low income groups who could not expect substantial aid from their families, the GI bill covered a large share of the costs of education. Other equally effective programs of financial aid would obviously make available to the dental profession a reservoir of capable students at a time when there is a growing need for qualified practitioners.

It should also be emphasized that despite the changing composition of the current dental student body and the gradual withdrawal of the veteran from the campus, married students will continue to make up an important segment of future enrollments. The especial needs of these students in terms of housing and other campus accommodations should be a major factor in planning future school facilities. Provisions for adequate, low-cost housing for married students would do much to solve their particular financial problems.

REFERENCES

- (1) U. S. Public Health Service: Financial status and needs of dental schools. PHS Pub. No. 200. Washington, D. C., U. S. Government Printing Office, 1952.
- (2) Pelton, W. J. et al.: Dental and dental hygiene students: Their characteristics, finances, and practice plans. *J. Am. Dent. A.* 51: 723-727, December 1955; 52: 72-80, January 1956; 52: 203-213, February 1956; 52: 343-349, March 1956; 52: 466-475, April 1956; 52: 607-620, May 1956; 53: 74-81, July 1956; 53: 343-354, September 1956.