

# The Impact of Dental School Admissions Processes on the Racial and Ethnic Composition of the Student Body

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## Abstract

“The Impact of Dental School Admissions Processes on the Racial and Ethnic Composition of the Student Body”

In 2000 the US Surgeon General’s released a report which compiled compelling evidence that the United States was facing a silent epidemic of oral disease. Since the release of that report, studies have continued to verify that there is an increasing rise in oral health disparities among specific segments of the US population, with some populations having low –income, behavioral impairments or physical disabilities and many residing in rural areas. These disparities are most profound for low-income African American and Hispanic populations. Many approaches have been suggested to eliminate oral health disparities, and it is likely that many of them will need to be implemented together if significant progress is to be achieved. Among the suggestions is the recommendation for a more diverse workforce, given that patients are more likely to seek health care and receive higher levels of satisfaction from those providers of similar backgrounds or ethnicity.

Similarly a long standing method of selecting student thru the traditional admissions process based mostly on standardized test scores has also hindered the ability of programs to create a diverse student body which will more likely work with those in-need populations and address oral health disparities. Faced with these challenges and in alignment with the overall University of Washington mission of a commitment to diversity and in an effort to address the access of health care crisis, in 2004 the University of Washington, School of Dentistry (UWSOD) implemented a whole-file review process in the selection of its dental students.

The current study compares demographic and academic characteristics of students matriculating into the dental school classes between 2006 and 2008 (Traditional Review) to those from classes entering between 2009 and 2011 (Whole-File Review). The gender composition of the two groups was similar under both admissions processes (Traditional = 35% female, Whole-File = 39% female;  $p = N.S.$ ). Likewise, the mean age was the same for both groups (24 years). The number of historically under-represented minority students tended to be higher in the Whole-File group, particularly for those self-identifying as Hispanic and Native American ( $\chi^2=9.70$ ,  $p < 0.09$ ). Average Dental Admission Test (DAT) scores of matriculating students were similar between groups (Traditional= 21.0, Whole-File= 20.9;  $p=N.S.$ ). However, the Reading score, was slightly lower in the Whole-File group compared to the Traditional group (21.8 vs. 21.2, respectively;  $t(327) = 1.99$ ,  $p < 0.05$ ). More students with a DAT Academic Average less than 18 were admitted in the Whole-File group compared to Traditional group (0 vs. 9,  $\chi^2=9.20$ ,  $p < 0.001$ ). The pre-dental grade point average was similar between groups (Traditional=3.59, Whole-File=3.54,  $p=N.S.$ ). In summary, Whole-File review tended to result in the selection of a more ethnically and racially diverse student body, with only slight changes to academic parameters as calculated on an average basis. The results of this study suggest that Whole-File review as implemented at the University of Washington, School of Dentistry is a valuable tool for increasing the diversity of students admitted to dental school and its effects on academically-based admissions criteria are negligible.

*Key Words: Dental School, Oral Health, Oral Cavity*

## Introduction

While the poor oral health of so many populations and communities in the United States has been well documented over the last 20 years, its societal cost is now receiving more attention. The report of the Surgeon General in 2000 did an excellent job of providing an overview of what was identified as a “silent epidemic” in the United States and increased the volume and scope of oral health research directed at oral health disparities [1]. Despite this increased focus, it is estimated that 47 million people in the United States currently live in places where it is difficult to access dental care [2]. It is also known that oral health disparities disproportionately affect racial and ethnic minorities and the poor [3, 4]. Whether it is the days lost from work by an adult because of odontogenic and non-odontogenic pain, or the inability of school-aged children to focus on learning in the classroom because of toothache pain, or the premature death of children

and adults from systemic infections that originated in oral cavity, the cost to society is great and deserves not only our attention, but the implementation of promising practices that will eliminate the problem. This crisis is not new, and its cause is known to be multifactorial. As such, there are many approaches that can and should be taken to address this complex problem.

One approach that has received attention is to increase the ethnic and racial diversity of the oral health workforce, including dentists [5]. The turbulent social and economic history of the United States has resulted in certain ethnicities and races being historically underrepresented in the dental workforce. Most notable for being historically underrepresented are Hispanics, Blacks, American Indians and Alaska Natives, and Native Hawaiian and Pacific Islanders. This trend of underrepresentation continues given that less than seven percent of dentists in the United States are

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from these ethnic and racial groups despite them comprising approximately 30% of the United States population. Clearly there is much work to be done to achieve parity.

The context for increasing the ethnic and racial diversity of the dental workforce is quite significant. For example, it is known that patients are more likely to seek health care from providers of similar backgrounds or ethnicity [6]. Also according to the Sullivan commission, Black patients are significantly more likely to receive their care from black dentists than from white dentists. At the time of this report, black dentists were treating approximately 62% of all black patients compared to only 10.5% of this patient pool by white dentists. Similarly, it has been reported that dentists who are themselves from ethnic and racial groups that have been significantly underrepresented treat significantly higher proportions of urban, less formally educated, and lower-income patients compared with their non-underrepresented minority peers [7,8]. Such workforce diversity has been associated with greater levels of satisfaction with the care received and improved communication between the patient and the provider [9, 10, and 11]. Such ethnic and racial concordance may also reduce cultural and linguistic linguistic barriers that have also contributed to oral health disparities [12].

Achieving the goal of increased ethnic and racial diversity in the dental workforce will require work “upstream”. Perhaps the most critical of the upstream targets on which to focus are dental schools, paying particular attention to the criteria they use to select dental students. The number of students from the historically underrepresented ethnic and racial minority groups listed above is small, and mirrors what is seen in the population of dentists. While some of this can be attributed to the disproportionately small size of the pool of dental school applicants from these historically underrepresented groups compared to their non-underrepresented minority peers, some of it can also be attributed to admissions criteria [13,14]. The admissions criteria for professional schools, including dentistry, has traditionally been heavily weighted on an applicant’s academic performance in college, especially the basic sciences that are generally agreed on as foundational (e.g., biology, chemistry, physics), and their performance on standardized admissions tests like the Dental Admissions Test (DAT). Of course there are many other applicant attributes that are considered in the selection process, most of which are not easily quantified but recognized as important factors in predicting the applicant’s success in dental school and perhaps the professional contributions they will make in the future that will benefit the communities they will serve and the workforce. Unfortunately, many applicants that come from the ethnic and racial groups that have been historically underrepresented in the profession are adequately prepared for the challenges of dental school, but selection criteria that favor and reward exceptionally high academic grades and scores on standardized tests become formidable barriers. In many cases, the academic and social backgrounds of these applicants are adequate to succeed in dental school, but not exceptional in the eyes of those making decisions about dental school admissions. This decreases their likelihood of being selected and given the opportunity to challenge the dental school curriculum. Sadly, this is rarely the fault of many of

these applicants who found themselves pursuing this professional goal in academic and experiential situations that are inadequately resourced, often resulting in lower grades in college courses deemed to be important and the DAT. One of the consequences of dental school admissions processes that are heavily weighted on exceptional academic performance is that applicants with perspectives and life experiences that are often quite different from the majority population are less likely to be selected. The cost of this selection bias can be quite high as we look toward the challenges the profession will face in the future as what is now the minority population will become the majority in the future. A more diverse and inclusive dental workforce will not only be needed to meet the demands of future patient populations, it will also broaden the depth and scope of the oral health research agenda and the development of policies that are culturally appropriate.

The purpose of this retrospective study was to test the hypothesis that a dental student selection process based on a holistic (i.e., whole file) review of results in increased diversity in the applicant pool being considered and those ultimately admitted when compared to the more traditional methods that rely more heavily on academic performance. The holistic review places substantive weight on life experiences, noncognitive assessments and their impact on the applicant’s academic performance in preparation for dental school [15-17]. If this hypothesis is true, one would expect dental students selected by a holistic process to be more diverse, not only in their ethnicity and race, but their perspective, interests and other things that will be important in the profession’s future. This study also examined whether there were differences in the quantitative prerequisite academic variables (i.e., GPA and DAT scores) between classes of dental students selected by these two selection process.

## Materials and Methods

All pre-doctoral students in the Class of 2006 through the Class of 2011 in the dental school in which this study was conducted were included in this retrospective analysis. Students in the graduating classes of 2006-2008 were classified as being admitted using traditional review processes (TR), and those in the graduating classes of 2009-2011 were classified as being admitted using whole-file review processes (WF). All student names and unique identifiers were de-identified and a unique number was assigned to each student’s information to link their demographics, DAT scores and grade point averages (GPA). To protect student identities and preserve confidentiality, the assigned numbers were only available to those responsible for data input (an office assistant and an information technology staff member). The study protocol was reviewed and approved by the university’s Human Subjects Review Committee.

### Traditional review process

*For the graduating classes of 2006-2008 students were selected using the traditional review process. A prescreening process of applicants was in place however the pre-selection criteria was based mostly on academics and was not quantified in a manner to include and consider other attributes of the applicants in order to advance applicants in the admissions process. After the pre-screening process*

*qualified applicants were sent a secondary application. The secondary process was relatively short in that applicants were required to complete only one essay. Thus the secondary process moved rather quickly and applicants were able to be evaluated and moved ahead in the admissions process. Acceptable pre-screened applicants were then screened for interviews by the Chair of the Admissions committee; the Admissions Officer and an Admission Committee member. In a majority of cases selection for interview was based on residency, BCP, GPA and overall DAT scores. In a few cases selection was made after reviewing the entire applicant record. Secondary applications were mailed to those applicants within the competitive range, generally based on the previous cycle acceptance statistics.*

*In addition to review of academic record and DAT scores, letters of recommendation were required from a dentist, a science professor and a character reference.*

The major criteria used to select applicants for interviews were based primarily on their GPA and DAT scores. Applicants holding Washington state residency were considered along with their academic qualifications. The chosen applicants were then interviewed by one member of the school's Admissions Committee and subsequently brought to the entire committee for discussion and voted on by the entire committee. Other criteria used during the committee deliberations included the applicants' dental experience, volunteer/community services and national service record. *The historical record of the applicant's dental experience and community service efforts were not very significant in the applicant's screening and interview process for the TR admissions process. In that details of the applicants dental experience and community service efforts were not an integral part of the admissions committee discussions and deliberations.*

### **Whole-file review process**

The graduating classes of 2009-2011 were classified as being admitted using whole-file review processes (WF). Prior to the 2003-2004 cycles the Admission Committee held a one day retreat. In addition to reviewing student progress and selection criteria the following speakers were invited: Dr. Cheryl Cameron to discuss the legal aspects of interview guideline, and Dr. Douglass Jackson who provided an update on diversity issues and initiatives in the School of Dentistry. Dr. Helen Remick, Assistant Provost for Equal Opportunity also attended and provided suggestions for maintaining positive interview session with the shift of teams of two interview approach.

In September 2004, Dr. James Steiner, Associate Dean for Student Services and Admissions invited Dr. Erik Metzler to a committee retreat to guide the committee in developing a missions and vision statements. Dr. Pollene Speed was also appointed as Admission committee chair and

Her initial work was to produce a mission statement that would guide the work of the Admissions Committee. Having a mission statement would pave the way for the admissions process to be mission-driven and for it to follow guiding principles. Among the values addressed by the mission

statement are academic performance, diversity, ethical values and commitment to community and underserved populations.

A pre-screening committee consisting of several committee members was appointed by the admissions chair to review applicants overall attributes from an established, quantified list of selection criteria. This list of criteria had been identified and pre-determined by the entire committee. Pre-screening criteria included four quantified areas of each applicant this included applicant residence, a demonstrated history of community services, dental experience and an identified academic score (DAT and GPA scores). Acceptable pre-screened applicants were then sent a secondary application which included a detailed process that required applicants to answer several essay questions with the content focused on addressing the goals of committee's mission statement. This secondary application process was detailed and lengthy and involved a good deal of time span from the initial intake of application to advancement to the next step in the admissions process. Acceptable applicants that had completed secondary applications were then reviewed by a screening committee. This screening committee was appointed by the admissions chair; the major task of this subcommittee was to select applicants for interview based on criteria which included reviewing the applicant's personal essay, their history of community service, residence status, dental experience and academic records. Applicants that were selected to receive an interview by this calibrated screening committee were then interviewed by multiply interviewers in multiple sessions. Interview questions were goal- driven and were aligned with the focus areas of the admissions committee's mission statement. Letters of recommendations were reviewed and considered but not required from specific sources or individuals. Those selected applicants that had been interviewed and scored by trained and calibrated committee members were then brought to the entire committee for discussion and vote. Committee deliberations included discussion of additional criteria gathered during the interview process which included other attributes of the applicant's whole profile such as their communication skills, history of working with underserved populations, distant traveled, and commitment to diversity. The historical record of the applicant's demonstrated history of community services and volunteerism was significantly considered during the WF review admissions process. In the development of its WF review process, the Admissions committee utilized the knowledge and experience of others well versed in the whole-file review process.

### **Data analysis**

The TR and WF groups were compared along a number of demographic and academic factors. The demographic data comparisons included age, gender, ethnicity and race, mother's and father's education. Academic data included GPA of prerequisite courses, DAT scores (perceptual ability, quantitative reasoning, reading comprehension, biology, general chemistry, organic chemistry, total science, academic average). All results are expressed as the mean  $\pm$  standard deviation.

## Results

### Demographics

A comparison of the age and sex of students admitted with the TR and WF processes is found in (Table 1). While the mean age was the same for both groups (TR =  $24 \pm$  \_ years, WF =  $24 \pm$  \_ years;  $p=N.S.$ ), there were slight differences in the age distribution between the two groups. While the greatest number of students was in the 21-25 year old age group, their

proportion was somewhat smaller with the WF process compared to TR. The TR process also resulted in more students in the 31-35 and 36-40 year old age groups compared to WF. In contrast, the number of students aged 26-30 was larger with the WF process compared to TR. The gender composition of the two groups was similar under both admissions processes (TR = 35% female, WF = 39% female;  $p=N.S.$ ).

**Table 1.** Traditional (TR) vs. Whole File (WF) admissions review comparison data for age and gender.

Age/Gender	Traditional Admissions Review				Whole File Admissions Review			
	2006	2007	2008	Total (TR)	2009	2010	2011	Total (WF)
Age 21-25	37	46	44	127	42	32	44	118
Age 26-30	10	7	7	24	13	22	8	43
Age 31-35	4	1	3	8	1	1	2	4
Age 36-40	3	1	1	5	0	0	1	1
Male	31	39	37	107	35	32	33	100
Female	23	16	18	57	21	23	22	66

Table 2 describes the race and ethnicity of students admitted by both review processes. The number of historically underrepresented students was higher in the WF group, with the largest gains observed in those students self-identifying as

Hispanic and Native American ( $\chi^2 = 9.70$ ,  $p < 0.09$ ). The number of students that self-identified as Caucasian was greater in the TR process.

**Table 2.** Traditional (TR) vs. Whole File (WF) admissions review comparison data for race and ethnicity.

Race/Ethnicity	Traditional Admissions Review				Whole File Admissions Review			
	2006	2007	2008	Total (TR)	2009	2010	2011	Total (WF)
African American	1	2	0	3	1	1	1	3
American Indian/Alaska Native	0	0	0	0	0	1	3	4
Hawaiian/Pacific Islander	0	0	1	1	0	0	1	1
Hispanic	1	1	1	3	5	1	6	12
Asian	9	16	7	32	14	13	13	40
Caucasian	43	36	46	125	35	39	31	105

### Admissions Rates of Underrepresented Minority and Non-Underrepresented Minority Applicants

Figure 1 displays the dental school admissions rates as a function of the applicant's designation as an underrepresented minority at the University of Washington (Panel A) and all dental schools on the United States (Panel B). The data shown in Panel A for the Classes of 2006, 2007 and 2008 describe the results of the TR process of applicants review for admission, while the data for the Classes of 2009, 2010 and 2011 describe the when the WF process was used. The percentage of applicants accepted from the total Non-URM pool steadily decreased across the six years of observation, starting at a high of 8.3% at the beginning of the TR observation period and a high of 6.0% at the beginning of the WF review period. This decrease mirrors what was observed with the total University of Washington applicant pool. In contrast, the percentage of URM applicants accepted during

the TR period remained relatively unchanged across the 3-year observation period (average of 3.2%), and increased substantially during the WF review period. In particular, the percentage notably exceeded that of Non-URM applicants in 2011.

For comparison, the data in Panel B displays the acceptance rates of URM and Non-URM applicants across the United States at the same time. The percentage of applicants accepted steadily decreased across the six year observation period in both the URM and Non-URM pools. The decreasing trend for Non-URM applicants is consistent with what was observed at the University of Washington (Panel A) during the TR period (Classes of 2006-2008) and WF period (Classes of 2009-2011).

## Discussion

Recent census reports have all verified that the US Population of citizens will be increasingly more of a diverse racial and ethnic groups in the future, thus there will be an increasing need to have oral health care providers that will serve these groups. This study utilized a whole file admissions process to help identify applicants most likely to serve these dental patients. With this admissions process, the number of historically under-represented minority students was higher for those applicants that identified as Hispanic and Native Americans, populations which have been shown to have challenges related to access to dental care. Examining the results of this study utilizing a Whole-file review process to increase the pool of viable applicants should be a consideration for dental school admissions committees.

## Conclusions

The results of this study suggest that Whole-File review as implemented at the University of Washington, School of Dentistry is a valuable tool for increasing the diversity of students admitted to dental school and its effects on academically-based admissions criteria are negligible.

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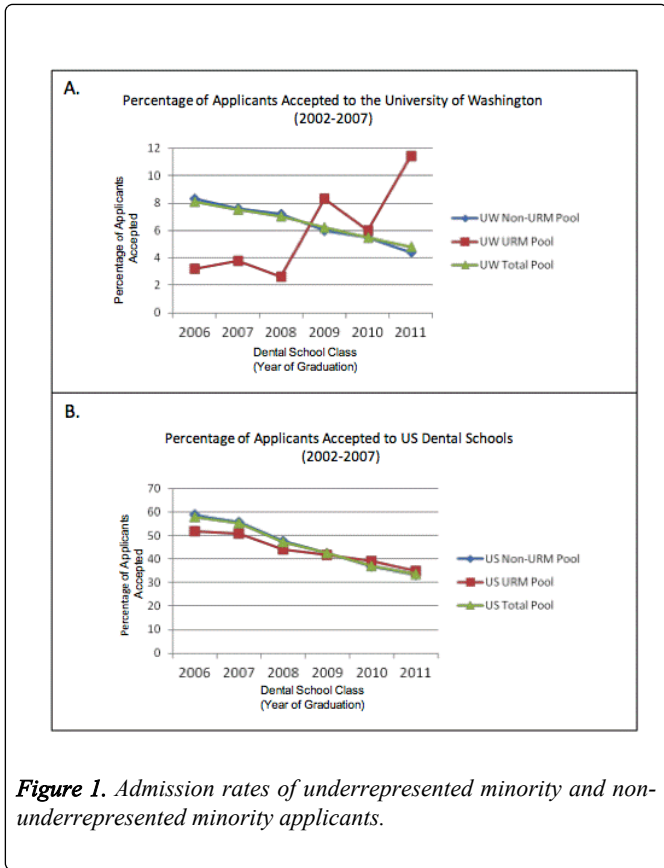


Figure 1. Admission rates of underrepresented minority and non-underrepresented minority applicants.

## A Comparison of Applicant DAT Performance between Review Processes

Figure 2 displays the scores of the six tests that comprise the DAT (). Average DAT scores of matriculating students were similar between groups (TR = 21.0; WF = 20.9; p=N.S.). However, the average score of the Reading test was slightly lower in the WF group compared to the TR group (21.2 vs 21.8, respectively;  $t(327) = 1.99, p < 0.05$ ). More students with a DAT Academic Average less than 18 were admitted in the WF group compared to the TR group (0 vs 9,  $\chi^2 = 9.20, p < 0.001$ ).

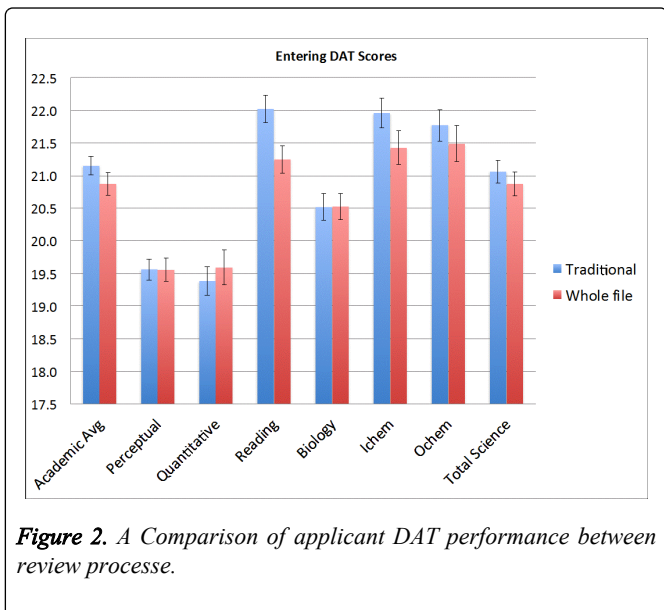


Figure 2. A Comparison of applicant DAT performance between review processes.

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