

The Impact of the Flexner Report on the Fate of Medical Schools in North America After 1909

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Abstract

Purpose: To quantify the influence of Abraham Flexner in terms of medical school closings and mergers attributable to his 1910 Report.

Methods: The online English language literature was searched using *Yahoo!*'s *Google* search engine to identify comments regarding the impact of the Report on school closings and mergers. Three hundred seventy-eight sites were thus identified, all of which were reviewed.

Results: Twelve (7 percent) of the 168 schools Flexner evaluated closed or merged because of the Report. The closings and mergers of another 26 schools (15 percent) were not credited by any comment to Flexner, but occurred in the two decades following the Report for reasons that may have been related to the Report. The impact of Flexner's work on another 33 schools (20 percent) is unclear. Finally, 97 (58 percent) did not close or merge because of the Report.

Conclusion: At least 12 (7 percent) of the 168 North American medical schools may have closed or merged after 1909 because of a bad grade from Flexner. The actual number of schools affected in this way is probably higher, perhaps 38 (22 percent), but could not be definitely determined.

The Flexner Report¹ of Abraham Flexner is considered pivotal in North American medical education shortly after the turn of the twentieth century. In the turbulent wake of the Report's publication, a host of schools closed and others merged. Many assume that the Report played a leading part in these closings and mergers,^{2,4} but none have quantified precisely the extent of Flexner's influence. One reason is the difficulty of determining whether a bad grade from Flexner was the sole cause of a school's ultimate demise when several other factors, including economic and statutory, may have played supporting or even lead roles. This study is a preliminary attempt to quantify the influence of Flexner in terms of school closings and mergers attributable to his Report. In the absence of controlled trials, expert opinion is the essential source of data. Although an obviously imperfect approach, compiling the opinions of medical historians and educators lays a foundation for exploring further the impact of the Flexner Report.

Methods

The online English language literature was searched using *Yahoo!*'s *Google*⁶ search engine to identify comments relating the Report to school closings and mergers. Three hundred seventy-eight sites were thus identified, all of which were reviewed, although not all addressed the Report's impact. The key words "Flexner Report" were used to identify 56 relevant sites. Once a definitive comment regarding a school had been obtained, as ascertained by reviewing the sites returned by *Yahoo!* in the order of their *Google* prioritization, no further searching for that school was performed. The impact of the Report on 11 (6 percent) of the 168 schools evaluated was determined in this manner.

Google searches were also performed on the names of all schools. Visiting these sites, in turn, frequently led to even more sites containing relevant information. Three hundred twenty-two additional sites were thus visited and reviewed. The fate of 127 schools (76 percent) was determined in this way. Online searching failed to reveal any reason for the closing or merger of 30 schools (18 percent), all of which were in the United States.

Results

Twelve (7 percent) of the 168 schools closed ($n = 9$) or merged ($n = 3$) for reasons attributed to the Report. For another 29 schools (17 percent) that closed or merged, the cause was unclear, but 26 (15 percent) of these schools closed or merged within two decades of the Report's publication. The authors of the online comments implied that an additional 97 schools (58 percent) were unaffected by the Report; several of these closed or merged, but apparently did so for reasons unrelated to the Report. Finally, online searching failed to yield comments for 30 schools (18 percent). The table accompanying this article provides summary information; the results for each individual school and corresponding references are presented in the appendix to the online version of this paper, which is available at www.jpands.org.

Table. Flexner's Impact on U.S. and Canadian Schools

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|--|------------|-------------|
| Did not close or merge as a result of the Report* | 97 | 58% |
| Closed or merged because of the Report | 12 | 7% |
| <i>Closed</i> | 9 | 5% |
| <i>Merged</i> | 3 | 2% |
| Closed or merged for unclear reasons | 59 | 35% |
| <i>Closed or merged in the two decades after the Report</i> | 26 | 15% |
| <i>Closed or merged more than two decades after the Report</i> | 3 | 2% |
| <i>Unknown disposition</i> | 30 | 18% |
| Total | 168 | 100% |

* None of the eight Canadian schools closed or merged as a result of the Report.

Discussion

The Flexner Report is pertinent to both epidemiology and policy. Epidemiology concerns itself with "the distribution and determinants of disease frequency" in human populations.⁷ How does studying the fate of medical schools fit this definition? Arguably, the education of doctors is within the purview of epidemiologists because of its indirect, but certain, impact on the treatment of disease. Moreover, the repercussion of the Report is of the nature readily analyzed by epidemiologists: both a denominator (*the number of schools evaluated*) and numerator (*the number that closed or merged as a result of Flexner*) are present.⁸ Like pioneering epidemiologists John Graunt, who in the middle of the 17th century quantified patterns of disease in a population by analyzing the weekly reports of births and deaths in London,⁹ and William Farr, who in the middle of the 19th century set up a system to compile routinely the numbers and causes of deaths in England and Wales,¹⁰ Flexner collected extensive data on which to base his conclusions.

His well researched Report is one of the most cited evaluations of medical education in the 20th century, was considered the "most influential publication of all" in medical education,² and was sufficiently momentous to be included in a 1974 issue of *Daedalus* entitled "Twentieth-Century Classics Revisited."¹¹ Yet, definitive analysis of its impact has not been performed. The list of schools in Flexner's day¹ is quite different from a list of current schools.^{1,2} Did

the Report play a part in this change? In the absence of experimental data, can we declare a cause-effect relationship between the Report and the fate of schools?

The set of criteria that British statistician Sir Austin Bradford Hill proposed to decide whether an environmental factor is a cause of disease^{1,3} may be adapted to our determination of whether the Report was a cause of a school's closing or merger. The Report as a cause satisfies the criteria of *temporality* (Flexner's inspections in 1909 preceded the rash of closings and mergers in subsequent years), *dose-response* (the casualty list of schools contains a high proportion of the ones most harshly criticized), *consistency* (many researchers have placed Flexner at the root of the reduction in the number of schools^{2,4}), *plausibility* (disfavored schools subsequently found it difficult to secure funding from foundations and governments and licensure for their students from state regulatory boards), and *analogy* (similar surveys have had a similar effect).

Serendipitous Searching

Although no experimental data exist, data for this study were nevertheless needed and readily available at a remarkable number of diverse sites, many of which were of remarkable quality. Investigating the fate of schools via searching the Web using each school's name was straightforward. Once a school's official site had been identified, links were followed to historical information about that institution. Often, one site would reveal the fate of more than one school. For example, a page at the site of Loyola University^{1,4} covered not only the medical school of Loyola, but also Bennett, Illinois, and Reliance Medical Colleges, all of which merged with Loyola. In this case, one site disclosed the fate of four schools.

Some searches did not lead directly to a page for a school, particularly if it had closed. However, a search for a school that had closed often led to other sites that disclosed its fate. Some pages addressed the history of schools in the same region. Others were for historical societies for a particular region that revealed information about schools that had closed. For example, one site presented the history of schools in Maryland^{1,5} and another^{1,6} discussed the defunct North Carolina Medical College in a passage about the school's building, which is a historic landmark.

Many comments explicitly identified the Report as a cause for a school's closing or merger. The previously mentioned passage about the North Carolina Medical College implicated the Report as a cause for its demise:

In the summer of 1910, . . . the Carnegie Foundation sent a representative to the North Carolina Medical College to evaluate the institution. In a published report, the Carnegie Foundation criticized the college for not having adequate facilities. In 1914, Dr. Monroe and his associates, unwilling or unable to spend the money required to bring the college into conformance with the Carnegie standards, closed the facilities. . . .^{1,6}

Unfortunately, many sites did not so clearly address the causes for schools' closings and mergers. Absent any attribution, these closings and mergers were not credited to Flexner. However, further research may likely show that his Report was instrumental, given that the majority of these schools closed or merged in the years shortly following Flexner's inspections. If these 26 schools that closed or merged in the two decades following his inspections were credited to Flexner, his Report would then be responsible for the closing or merger of 38 (22 percent) of the 168 schools. Including the 3 schools (2 percent) that closed or merged more than two decades after the Report and the 30 schools (18 percent) of

unknown disposition would increase this percentage to 42, representing a potential maximum proportion of schools affected by the Report.

About the Report

What are we to think of this document that may have had so profound an effect? It is popularly known as the *Flexner Report*, but officially entitled *Medical Education in the United States and Canada: A Report to the Carnegie Foundation for the Advancement of Teaching*.¹ Published in 1910 by the Carnegie Foundation, the 346-page tome arose from research conducted by Flexner, who claimed to have visited and objectively evaluated 156 graduate and twelve postgraduate medical schools in the United States and Canada. He sought data on five points for each of the schools: (1) entrance requirements and adherence to them, (2) the size and training of the faculty, (3) the sum and allocation of endowment and fees to support the institution, (4) the adequacy and quality of the laboratories as well as the training and qualifications of the laboratory instructors, and (5) the relationships between the school and its associated hospitals.

Although Flexner's motives^{1,7} and methods^{1,8} may be disputed, his systematic collection of data is remarkable for his time. Indeed, a scientific veneer distinguishes the Report from prior attempts to reform medical education, which partly consisted of largely unsubstantiated vilification of those who competed against the favored allopathic approach. Flexner, for example, shared Oliver Wendell Holmes' contempt for practitioners of homeopathy.^{1,9} Flexner's words, however, were particularly powerful because they were substantiated by data supposedly obtained through thorough and objective investigation. It should be noted that Flexner's approach was remarkable, but not entirely novel. It was rooted in the British Victorian social reformers' enthusiasm for collection and enumeration^{2,10,11} and likely influenced by an article based on school inspections performed by the Council on Medical Education of the American Medical Association in 1906.² Flexner walked on paths that others had recently pioneered.

The Report consisted of two parts. In the first part, Flexner discussed the history of medical education, described what its proper basis should be as well as what the actual basis was, recommended a curriculum, discussed financial aspects, proposed a plan for reconstructing medical education, and commented on "medical sectarianism," state boards of licensure, postgraduate education, and educating women and "Negroes."¹ In the second part, Flexner summarized his findings for the 168 schools he claimed to have visited. He described them with striking and often caustic candor. The equipment at one school, Flexner observed, was "dirty and disorderly beyond description."¹ He recorded that the department of anatomy at another school occupied an "out-house, whence the noisome odor of decaying cadavers permeates the premises."¹ Another institution had "in place of laboratories, laboratory signs. . . ."¹

The University of Virginia is an example of one of the few that escaped Flexner's typical vituperation. After visiting its Department of Medicine in February of 1909,¹ Flexner presented data for each of the five points. First, the "entrance requirement" was "one year of college work in sciences." Second, the "teaching staff" consisted of "31 teachers, of whom 12 [were] professors, 19 of other grade" and the "laboratory branches [were] taught by 8 instructors who [gave] their entire time to them." Third, the "resources available for maintenance" derived from "funds of the university" and \$10,060 in income from fees to meet the \$52,195 departmental budget, which included the hospital deficit. Fourth, the "laboratory facilities" were

“good” and overseen by “enthusiastic teachers of modern training and ideals.” Their “main present lack” was “a suitable building and an adequate medical library.” Finally, the “clinical facilities” consisted of 100 beds. The relation of the University Hospital “to the medical school and its organization for teaching purposes” left “nothing to be desired.” Although the material had “not yet reached proper proportions,” it was “increasing” and “skilfully [*sic*] and effectively used to train the student body in the technique and methods of scientific medicine.”¹

At the conclusion of each section corresponding to a region, Flexner presented “General Considerations” consisting of his summary and recommendations. For Virginia, he concluded that “the rapid improvement of the medical department of the University of Virginia in the last three years is one of the striking phenomena of recent medical school history.”¹ In contrast, the Commonwealth's two independent schools were clinically inadequate, for which Flexner recommended their consolidation.¹

The recommendation to consolidate or close schools and raise standards was a common cry of Flexner. His intent was to reduce the physician supply, for far too many physicians were practicing, according to Flexner, due to “an enormous over-production” of practitioners.¹ He thus ambitiously called for reducing the number of schools to 31, cutting the annual output of physicians from 4,442 to 2,000.¹ The change effected was not as severe as that recommended, but was nonetheless dramatic. Between 1904 and 1920, the number of medical schools decreased to 85 and the number of students from 28,142 to 13,798. The percentage of schools requiring two years of college for admission rose from three to 92. The resulting increased preparation in science allowed schools to concentrate more on the biomedical sciences instead of chemistry and physics and the curriculum to contain more laboratory experience.²³

Women and Blacks

Flexner's criticism seems to have fallen most heavily on schools that professed philosophies diverging from the allopathic, were proprietary, or educated primarily women or blacks. Flexner, for example, argued that there was no need for medical schools specifically devoted to women and recommended that all three such schools be closed. He explained that “it is clear that women show a decreasing inclination” to enter the profession because “any strong demand for women physicians or any strong ungratified desire on the part of women to enter the profession . . . is lacking.”¹

Flexner also recommended that “the seven medical schools for negroes” be reduced to two; he considered five to be “ineffectual” and “in no position to make any contribution of value.”¹ Flexner argued that the two schools should remain operational because there would always be a need for black physicians, even though the “medical care of the negro race will never be wholly left to negro physicians.”¹ Blacks, being “a potential source of infection and contagion,” needed their own physicians.¹ Flexner further recommended that “hygiene rather than surgery” be “strongly accentuated” in these schools.¹ By 1923, only two medical schools for blacks remained.^{2,4} The Report, with its patronizing tone toward black institutions and physicians, set the pattern for admitting minorities into medical schools that persisted for several decades; between 1920 and 1964, less than three percent of students entering American medical schools were black.^{2,5}

Although Flexner may have been neither objective^{1,7} nor thorough,^{1,8} this study reveals the considerable influence that he nevertheless exerted on the fate of North American medical schools in the early part of the twentieth century. In a broader sense, the current study shows the significant impact that surveys of the type

conducted for the Flexner Report can have, whether performed to evaluate managed-care plans,^{2,6} hospitals,^{2,7} or the physician supply.^{2,8} It is important, therefore, that such surveys be conducted thoroughly and objectively.

Limitations

The current study has its own problems. In quantifying the impact of the Report *only* in terms of school closings and mergers, this study fails to capture Flexner's influence that may have been manifest in other ways, such as, for example, changing the curriculum of those schools that survived the Report.² A follow-up study should ascertain the impact of Flexner's recommendations in this regard. In defense of the current approach, however, initial epidemiological studies often look at the mortality of people in the way that this study focuses on the “mortality” (closing or merger) of institutions.

Further limitations arise from using online comments, calling the validity and reliability of the results into question. First, this method failed to uncover causes for the closing or merger of 30 (18 percent) of the 168 schools. Another 29 schools (17 percent) merged for reasons that may have been associated with Flexner but cannot be attributed to him because of the lack of comments to this effect. Second, the validity of this study, of course, is susceptible to all the biases and deficiencies of relying on data obtained through online searching. Conjecture in comments based on perception, of course, does not define reality, but this preliminary subjective assessment is a reasonable first step into an area in which few easily traversable paths to the truth exist. The study could perhaps be made more rigorous by presenting Kappa statistics (κ)^{2,9} to yield a sense of the degree to which commentators agreed.

The next step would be a multivariate analysis to take into account the varying effects of various factors.^{3,10} In a regression model, the dependent, or outcome, variable (Y) would be whether a school closed or merged, as determined by multiple independent, or predictor, variables (X):

$$Y = a + b_1X_1 + b_2X_2 + \dots + b_nX_n.$$

These predictor variables could include Flexner's evaluation of a school, either favorable or critical; a school's endowment, annual income, debt-to-asset ratio, and degree of competition faced, perhaps measured by the number of schools in the same region divided by the population of that region; the amount of funding received from external sources, both from governments and foundations;^{3,1} and the rigor of statutory change in the state in which the school resided.

Conclusion

Just in terms of school closings and mergers, the Flexner Report has had a profound impact on North American medical education. Between 7 and 22 percent of schools may have closed or merged because of what Flexner wrote. Further research is needed to pinpoint more precisely the extent of Flexner's influence in the context of other contemporaneous factors affecting the fate of medical schools after the turn of the twentieth century.

More broadly, given the potentially enormous impact that a single study related to a policy agenda can have, critical scrutiny of the underlying assumptions and applied methods of such studies is warranted.

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