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# Does Chiropractic “Add Years to Life”? A Second Look

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## Citation

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## Abstract

**Introduction:** A 2004 study found no evidence to support the claim made in the cliché, “chiropractic adds years to life.” Among the flaws in that study was a comparison of a 26 year period to only a two year period for life expectancies. The present study provides a re-analysis of that data. **Methods:** Average chiropractor age at death for each of the 26 years from the 2004 study were compared to life expectancy for matching years for a total of 26 comparisons. **Results:** Average age for chiropractors was: a) 1.2 years higher than average life expectancy (though not statistically significant, with a small effect size) and b) higher in 17 out of the 26 (65.4%) years compared. **Discussion:** Flaws in the 2004 study prevent a meaningful conclusion to drawn in the present study. Although the calculations in this study favor the claim made in the cliché, their lack of statistical significance and small effect size prevent also prevent a firm conclusion. **Conclusion:** The question of whether chiropractic adds years to life would best be answered by a properly designed study.

## INTRODUCTION

A study from 2004<sup>1</sup> challenged the chiropractic cliché, “chiropractic adds years to life,” and found no evidence to support the claim stated in the cliché. That study obtained age at death for a convenience sample of male chiropractors, presumably Caucasian, from two sources: 1) Dynamic Chiropractic (1989-2003), and 2) Who Was Who in Chiropractic - A Necrology (1969-1979). The study found average age at death for chiropractors to be 73.3 years of age (SD 12.7) for the Dynamic Chiropractic data and 74.2 years of age (SD 10.5) for the Who Was Who in Chiropractic - A Necrology data. The study compared the chiropractor ages at death to life expectancy ages for: a) males in the U.S. in 2000, whose average age at death was 76.9 and b) medical doctors in England and elsewhere in 1995, whose average ages at death were 75.2 years (SD 13.4) in England and 81.5 years (SD 9.8) for the “rest of the English-speaking world.”

<sup>1</sup>As pointed out by Gleberzon,<sup>2</sup> the ages for the medical doctors here (ages 75.2 and 81.5) likely included females, who typically live longer than males. The medical doctor ages were therefore likely inflated due to the inclusion of females while the chiropractor ages in the 2004 study were likely deflated due to exclusion of females. Another pitfall of the 2004 study, as noted by Parker,<sup>3</sup> is that chiropractors themselves may not have been on a maintenance care program, when a maintenance (preventative) care may increase longevity.

This author notes other limitations of the 2004 study. First, it omitted chiropractor deaths due to un-natural causes such as accidents. While this omission may actually inflate the chiropractor ages, it nonetheless prevents a valid comparison to longevity tables that include deaths from all causes. Interestingly, a casual search in Dynamic Chiropractic (a source used in the original study) performed by this author revealed a chiropractor death due to a car accident, where the chiropractor was 86 years old at the time of the accident!<sup>4</sup> Thus, one has to wonder how many other chiropractors may have lived to a ripe old age and then died in an accident, but were excluded in the 2004 study. Indeed, accidental deaths due to falls of those 65 and older increased 31% during 1999-2003,<sup>5</sup> which of course are years included in the 2004 study. Consequently, it is unclear as to whether omission of un-natural causes of death in the 2004 study would inflate or deflate ages at death. This question is obviously applicable to the comparison group as well. Secondly, the sample was not random. This means the 2004 study findings are difficult to generalize to other chiropractors, and even more difficult to generalize to their patients (since it is unknown whether the chiropractors in the 2004 study were also chiropractic patients themselves). Thirdly, the 2004 study compared life expectancy from two years (1995 and 2000) to chiropractor deaths spanning a 26 year period rather than comparing to matching years. Since life expectancy tends to increase from year-to-year, it is important that the same year is used for comparison purposes. As it is, the 2004 study compared, for

example, chiropractor deaths from 1992 to the more recent years of 1995 and 2000, which is not a fair comparison. The author attempted to locate other sources for obtaining age-at death for chiropractors, including Pubmed sources, to no avail.

**METHODS**

The present study uses the same chiropractor data from the 2004 study with a modification of averaging multiple chiropractor ages at death for a single year. If a particular year had only one chiropractor death, that age was used for that year. This method was used for each of the 26 years included in the 2004 study (1969-1979 and 1989-2003) for a total of 26 comparisons. The author was unable to locate age at death for medical doctors for years matching the chiropractor years used in the 2004 study.

Average life expectancy data (LE) for U.S. white males was obtained from U.S. Census Databases for years 1969-1979, and 1989-2003,<sup>6,7</sup> which, as noted previously, were the chiropractor years used in the 2004 study. LE and chiropractor age at death (CA) were compared for differences by subtracting LE from CA, and then noting the number of years that CA was greater than the LE. In addition, differences between these two variables (LE and CA) were analyzed to determine if their difference was statistically significant.

Data analysis was performed in Stata IC 12.1 (StataCorp, College Station, TX). Histogram inspection of the differences between two variables revealed a fairly normal distribution. Consequently, the two variables (LE and CA) were compared using the paired t test, with an alpha level of 0.05. A two-tailed p-value less than or equal to this alpha is considered statistically significant. Effect size between LE and CA was also calculated, in Excel 2010 (Microsoft Corp., Redmond, WA). The formula used for this is  $\frac{\text{mean 1} - \text{mean 2}}{\text{pooled standard deviation}}$  as suggested by Baumgartner,<sup>8</sup> with the pooled standard deviation formula outlined by Kitchens.<sup>9</sup>

**RESULTS**

In more than half of the years, 17 out of the 26 (65.4%), chiropractor age at time of death (CA) was greater than life expectancy for white males in the U.S. (LE) for matching years (Table 1). In addition, average CA was 1.2 years higher than the average LE. Specifically, average CA was 73.1 years of age (SD 7.6) compared to average LE which was 71.9 years of age (SD 2.6), a difference though that was

not statistically significant ( $p = 0.4499$ ). A small effect size (of 0.21) was observed between CA and LE.

**Figure 1**

Table 1. Descriptive statistics adapted from the 2004 study. CA = chiropractor age at time of death used in the 2004 study. CAn = number of chiropractor deaths reported in the 2004 study. LE =average life expectancy of U.S. white males by year from U.S. Census Bureau.CA-LE diff = LE subtracted from CA. difference between CA and LE. SD = standard deviation. CI = confidence interval.

Year	CA	CAn	LE	CA-LE Diff
1969	70.0	2	67.7	2.3
1970	75.7	6	68.0	7.7
1971	81.0	5	68.3	12.7
1972	62.3	3	68.3	-6.0
1973	75.2	6	68.5	6.7
1974	70.0	4	69.0	1.0
1975	73.3	3	69.5	3.8
1976	79.0	10	69.9	9.1
1977	71.6	13	70.2	1.4
1978	71.8	8	70.4	1.4
1979	76.7	7	70.8	5.9
1989	78.0	1	72.5	5.5
1990	78.0	1	72.7	5.3
1991	66.0	1	72.9	-6.9
1992	81.0	2	73.2	7.8
1993	55.0	2	73.1	-18.1
1994	86.0	1	73.3	12.7
1995	59.0	5	73.4	-14.4
1996	60.3	3	73.9	-13.6
1997	78.0	4	74.3	3.7
1998	73.0	4	74.5	-1.5
1999	74.3	8	74.6	-0.3
2000	82.6	9	74.9	7.7
2001	71.0	4	74.8	-3.8
2002	79.5	5	74.9	4.6
2003	71.4	5	75.0	-3.6
Mean	73.1	4.7	71.9	1.2
SD	7.6	3.1	2.6	7.9
95% CI	70.0, 76.1	3.5, 5.9	70.1, 72.9	-2.0, 4.4

**DISCUSSION**

No firm conclusions can be made from the present study due to the lack of statistical significance in comparing CA and LE. However, there is weak evidence that CA is greater than LE because: a) the percent of years where CA was greater than LE (65.4%), and b) the effect size, though small (0.21), indicating a small practical difference between CA and LE.

Given the problems with the 2004 study (e.g., non-random sampling of chiropractors, non- sampling of chiropractic patients, and non-matching years for many of the years compared), the findings of that study, and therefore the present study cannot easily be generalized to either the general population of chiropractors or to their patients. Future study should include people (chiropractors and /or non-chiropractors) who are known to be actual patients, to determine the effect, if any, of chiropractic care on life expectancy.

## **CONCLUSION**

Firm conclusions are not possible in either the present study or the 2004 study for the reasons outlined in this re-analysis. Future research intended to answer the question of whether chiropractic “adds years to life” should, at a minimum, include: a) a sample of chiropractic patients rather than chiropractors themselves and b) matching years for the life expectancy comparisons.

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