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Purpose: To assess whether the attending physicians at the University of North Texas Health Science Center – Texas College of Osteopathic Medicine would perceive an increased student interest in osteopathy as well as show a personal increased interest in osteopathic principles and practice following a 2001 OMM curricular reform.

Study Design: Surveys were mailed at the beginning and end of the 2002-2003 academic year. Responses were matched for pre-post comparisons.

Results: Factor analysis identified 13 factors. ANOVA analysis did not achieve statistical significances between pre and post groups. Although regression analysis identified three factors that achieved statistical significance ($p \leq 0.05$), these were attributed to variables such as residency type, medical school and type of practice.

Conclusion: The survey instrument was effective in detecting variables that influenced beliefs and practice. Future larger scale studies are needed to confirm the trends in the data.

PRELIMINARY TRIAL OF A SURVEY INSTRUMENT TO DETECT OUTCOMES
OF CURRICULUM REFORM IN OSTEOPATHIC MANIPULATIVE MEDICINE


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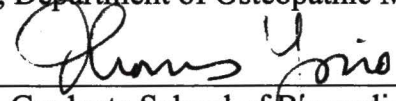

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PRELIMINARY TRIAL OF A SURVEY INSTRUMENT TO DETECT OUTCOMES
OF CURRICULUM REFORM IN OSTEOPATHIC MANIPULATIVE MEDICINE

THESIS

Presented to the Graduate Council of the
Graduate School of Biomedical Sciences

University of North Texas
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in Partial Fulfillment of the Requirements

For the Degree of

MASTER OF SCIENCE

By

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Fort Worth, Texas

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SPECIFIC AIMS

In an effort to address the need for change in osteopathic education, the Osteopathic Manipulative Medicine (OMM) Department at the University of North Texas Health Science Center – Texas College of Osteopathic Medicine (UNTHSC - TCOM) underwent a substantial curriculum reform in fall of 2001. Beginning with the freshman year of the class of 2003, the college had undergone a curricular change from a science-based curriculum to a systems-based curriculum. The new OMM curriculum took advantage of this opportunity to more fully integrate osteopathic philosophy and principles of treatment with anatomy and physiology and to integrate osteopathic methods of treatment into the systems courses that comprised the majority of the newly reformed medical school curricula. The class of 2004 was the first group of students to pass through the newly integrated curriculum. Throughout their second year, the students were trained to apply osteopathic principles and choose appropriate treatment modalities and techniques based on their understanding of the anatomy, physiology and pathology of each organ system that they were studying in the rest of the curriculum. It was anticipated that greater insight into osteopathy would become evident in these students once they began their clinical rotations. Furthermore, the curriculum was an attempt to address a premise published by the Educational Council on Osteopathic Principles (ECOP) stating that students that had confidence in their manual medicine skills would be more likely to apply those skills throughout their careers.¹ The impact of the curricular reform on the students was studied in 2003. The study demonstrated that there

was a significant improvement in the understanding of osteopathic principles and psychomotor skills as well as overall satisfaction with the course in comparison to students that had undergone the other curriculum.²

The objective of this study was to compare the attitudes of attending physicians at UNTHSC-TCOM towards osteopathy prior to and following their interaction with the students who had undergone the new curricular training. The primary hypothesis to be tested was that following their interaction with students that had undergone the new OMM curriculum the attending physicians would show an increased interest in osteopathic principles, as well as notice an increased student interest in osteopathy.

To accomplish the objective of this study two specific aims were established:

- 1) To collect data regarding the attitudes of attending physicians affiliated with the UNTHSC towards osteopathy. To obtain this data a survey consisting of statements that addressed physicians' osteopathic beliefs, limitations to use of OMT and view of the students' attitudes towards OMT and its principles was developed and administered.
- 2) To analyze the data obtained from the survey instruments with the purpose of comparing the pre and post groups in order to identify changes. Data analysis consists of factor analysis, ANOVA, and linear regression.

Upon completion of this study, the investigators expected to have a better understanding of the effects that the curricular change had on the attitudes of the attending physicians regarding osteopathy. The results of this study will allow a method of evaluating the curricular changes and thus provide information necessary to continue curricular

revisions according to the students' needs. It will furthermore provide a new survey instrument to assess osteopathic beliefs and the effects that demographic variables may have on the use of OMT.

BACKGROUND

A primary characteristic that distinguishes osteopathic medical schools from their allopathic counterparts is their adherence to a unique philosophy which includes the following osteopathic principles: 1) the body is a unit; 2) the body has its own self-protecting and self-regulating mechanisms; 3) structure and function are reciprocally interrelated; and 4) rational medical treatment is based on the understanding of the previous three principles. The curricula may change from one osteopathic medical school to another but the teaching of these four principles is constant across all osteopathic medical education.

Even with such a strong foundation, osteopathic literature is filled with articles, editorials and letters voicing concern over the loss of the unique identity of the osteopathic physician.^{3,4,5} Some D.O.'s have predicted an eventual integration of osteopathy into the medical mainstream, in a manner similar to that of homeopathy and other alternative medicine disciplines. Others express an intense desire to maintain their identity and have suggested possible curricular changes that would prepare new osteopathic physicians to practice medicine in an ever-changing healthcare setting without compromising their osteopathic principles.^{6,7}

It is no wonder that many studies have been performed in an effort to pinpoint where the practice of osteopathy is being lost. Researchers have shown a progressive reduction in the number of medical students and graduates use of osteopathic manipulative treatment (OMT) or belief in the effectiveness of OMT in patient care.^{8, 9, 10} One researcher that specifically questioned students about why they did not use OMT showed the two most common reasons were “lack of time” (46%) and being “discouraged by the attending physician (22%).”¹¹ Another researcher surveyed practicing physicians to identify the reasons that they did not use OMT in their practices and 60% quoted “lack of time” as the top reason. Interestingly, “lack of confidence” in their OMT skills and “insufficient training” were chosen 22% and 19% of the time.¹²

Other researchers have taken steps to identify the factors that play a role in the development of these attitudes and practices. A unique concept arose from the development of a survey that focused on the attitudes of students towards osteopathy.¹³ The researchers concluded that the survey instrument itself had the potential to be used by admission committees to ensure matriculation of students that were truly familiar and dedicated to osteopathic beliefs. The unstated assumption of the study was that the survival of osteopathy as a unique field could be achieved by way of a careful osteopathic-based selection of students. This was a strong statement that offered a rebuttal to the fact that many of the students who use osteopathic medical schools as “back doors” into medicine subsequently show little support, if not outright skepticism to basic osteopathic principles.¹⁴

In contrast, public opinion and support of osteopathic physicians has seemingly improved. Over the last six years, the American Osteopathic Association (AOA) has prioritized public awareness and education about osteopathy through programs such as “I go to a D.O for.” A recent study surveyed a group of 459 patients regarding their satisfaction with OMT. The results indicated that patients believed OMT was highly efficacious because of significant relief from pain and/or discomfort as well as improvement in mobility.¹⁵

SIGNIFICANCE

Medical education researchers clearly indicate that objectives and class plans are not the only important part of a curricular change. The design process must include a method of evaluation of altered expectations of their students in order to continue adapting the curricula to achieve their intended outcomes.¹⁶ Other researchers have shown that educational changes may influence attending physicians’ attitudes and even lead to subsequent changes in practice. One researcher showed that curricular changes of internship didactics at one institution showed a significant increase in the use of osteopathic examinations by attending physicians who had no direct exposure to the curriculum.¹⁷ These findings could be attributed to the fact that University-based attending physicians working closely with students usually stay more current in their practices, are more thorough, and open to questioning routine procedures and protocols.

This research study introduces a form of evaluation of the curriculum as well as an assessment of the possible effects that the reform may inadvertently have on the attending physicians' osteopathic beliefs and practices. It is a worthy effort to see if the students' interest and enthusiasm regarding osteopathy influences the way attending physicians view osteopathy and perhaps change their own practices. This study was needed to ascertain whether an effect of the curricular change is successfully instilling a resurgence of interest, dedication and application of osteopathic principles in both students and their preceptors.

METHODS

Subjects

It was decided that the attending osteopathic physicians appointed by the University of North Texas Health Science Center at Fort Worth during the years 1978 to 2002 were appropriate subjects due to the fact that they interacted with the first class of students that had coursed through the new Osteopathic Manipulative Medicine curriculum and would be most likely to note any differences from the previous classes. Radiologists and pathologists were excluded due to the limited patient contact inherent to their specialties. All preceptors used as subjects in this study were recruited from the clinics of the University of North Texas Health Science Center at Fort Worth and university affiliated facilities. Participation in this study was completely voluntary and confidential and no incentives or compensation were offered to the subjects for their participation.

Survey development

Three osteopathic physicians and two osteopathic manipulative medicine predoctoral fellows that were involved with the planning and launching of the curricular reform were interviewed. They were asked to describe values and thoughts relating to osteopathy that they believed had the potential to be affected by the curricular reform. A one page questionnaire with two sections was developed. The first section was comprised of demographics the interviewed subjects thought might influence the outcome of the study such as year of graduation, school, gender, residency type (AOA vs. ACGME), practice type (primary vs. specialty) and a percentage of how much OMT by percentage they used in their practice (0%, 25%, 50%, 75% or 100%). The second section was a list of 14 statements that addressed belief in osteopathic principles, view of students' interest in osteopathy, practical value of osteopathy and issues that affect the use of OMT in a clinical setting. A 4-point Likert response scale that assessed the degree of agreement was attached to each statement (1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree). A 4-point Likert scale was used instead of a 5-point in order to minimize neutral responses. The survey is presented in Figure 1.

1. Medical School and Year of Graduation: _____ 19_____

2. Residency Program: ACGME AOA

3. Gender: MF

4. Practice Type: Primary Care Specialty Care

5. Select the closest % of patients on whom you use OMT in your clinic:

100% 75% 50% 25% 0%

For each question below, circle the number to the right that best fits your opinion. Use the following scale to match your opinion.

| | |
|---|----------------|
| 1 | |
| 2 | Disagree |
| 3 | Agree |
| 4 | Strongly Agree |

| Questions | | | | |
|-----------------------------------------------------------------------------------------------------|---|---|---|---|
| 1. I believe OMT is a useful method of treatment for my patients | 1 | 2 | 3 | 4 |
| 2. I feel I had sufficient training in OMT | 1 | 2 | 3 | 4 |
| 3. I encourage students on my service to use OMT | 1 | 2 | 3 | 4 |
| 4. Students on my service show interest in the application of | | | | |
| a. osteopathic manipulative treatment | 1 | 2 | 3 | 4 |
| b. osteopathic philosophy | 1 | 2 | 3 | 4 |
| 5. I believe OMT is valuable in my clinical practice for patients | 1 | 2 | 3 | 4 |
| 6. I believe OMT is valuable in my clinical practice for practice building | 1 | 2 | 3 | 4 |
| 7. OMT is too time-consuming to be used in a clinical setting | 1 | 2 | 3 | 4 |
| 8. Poor reimbursement affects my use of OMT | 1 | 2 | 3 | 4 |
| 9. The utility of OMT is primarily limited to musculoskeletal complaints | 1 | 2 | 3 | 4 |
| 10. I do not feel confident with my OMT skills | 1 | 2 | 3 | 4 |
| 11. I agree with the following osteopathic principles in my practice: | | | | |
| a. The body is a unit | 1 | 2 | 3 | 4 |
| b. Structure and function are reciprocally interrelated | 1 | 2 | 3 | 4 |
| c. The body has the inherent ability to heal itself | 1 | 2 | 3 | 4 |
| 12. I apply the previously stated (question #11) osteopathic principles in my practice | 1 | 2 | 3 | 4 |
| 13. I am satisfied with the level of OMT used in my clinic | 1 | 2 | 3 | 4 |
| 14. I believe incorporating OMT into my practice could provide an additional benefit to my patients | 1 | 2 | 3 | 4 |

Figure 1. Survey

Research Design

It was decided that a pre-test/post-test design would be most appropriate for this kind of research. The study essentially looked at the same subjects' responses before and after the curricular change. This design is characterized by the use of a pre-measurement to establish a baseline, which in this study was the first mailing prior to the curricular change. After the first survey was administered, the intervention, in this case the curricular change, was introduced and the subjects were given the survey again. The fact that the subjects act as their own controls is one of the advantages of this type of study design. However, the project design lacked a comparison group, which raises the question if the results were truly attributable to the curricular change or if other factors played a more significant role.

The results from each group were then analyzed using factor analysis, ANOVA, and linear regression. These different methods of statistical analysis allowed the investigator to determine if the changes in the responses between the pre and post groups were statistically significant. Furthermore, regression analysis allowed the researcher to identify those demographic variables that may have influenced the subjects' responses.

Administration of the instrument and data collection

Following approval of the Institutional Review Board (IRB) of the University Of North Texas Health Science Center at Fort Worth, the subjects were given the same survey instrument approximately one year apart. The first round of surveys was administered at

the beginning of the third year of the class of 2004 in June of 2002; the second at the end of the same academic year in May of 2003. A cover letter accompanied the survey emphasizing the voluntary and anonymous nature of the study. Subjects were given pre-addressed interoffice campus mail envelopes to return the survey. Each survey was a self-reported instrument without subject identifiers in order to ensure confidentiality. The entire process was performed in the same manner for the mailings at both the beginning and end of the 2002-2003 academic year. 39 surveys of 75 sent out were returned during the first round (52% response rate); 33 of 72 surveys were returned during the second round (46% response rate), 23 of which were matched for pre-post comparisons.

FINDINGS

Factor Analysis

Following preliminary review of the data, a principal component factor analysis with varimax rotation (SPSS Version 12.0) was performed in order to determine the underlying structure of the 14 item survey. Factor analysis is a data reduction method that allows the investigator to view the primary components of the survey the way the subjects did. It is also used to reduce the data to a smaller, more workable number of factors that are statistically independent and can explain most of the variance observed in the overall data. In this process, the items are grouped together based on how closely related they are and the independent factors are teased out based on the data's correlations. Factors represent the underlying psychological constructs of the correlated

items that make them up. So, highly correlated items such as items regarding the belief that the body is a unit and that the body has an inherent mechanism of healing were grouped together under Factor 1 which was subsequently named Belief in Osteopathic Principles. In order to determine the factors, the rotated component matrix was examined and the items with an absolute value factor loading greater than .45 were closely reviewed and interpreted. Factors were retained if they contained multiple items or, in the case of there being only one item, they were retained when the factor loading value was greater than .7. Thirteen factors were retained based on the stated criteria and are contained in Table 1.

| | Factors – Title | Items | Factor Loading |
|-----------|--------------------------------------------------------|--------------------------------------------------|-----------------------|
| 1 | Belief in Osteopathic Principles | Body as Unit | 0.808 |
| | | Structure and Function Interrelated | 0.929 |
| | | Body's Ability to Heal Itself | 0.785 |
| 2 | Student Interest in OMT | Student Interest in OMT | 0.848 |
| | | Student Interest in OMT Philosophy | 0.951 |
| 3 | Satisfaction with the Level of Use of OMT | Satisfaction with Use of OMT | 0.966 |
| 4 | Poor Reimbursement for OMT | Poor Reimbursement | 0.969 |
| 5 | Sufficient Training | Sufficient Training | 0.882 |
| 6 | OMT Valuable in Practice Building | OMT Valuable in Practice Building | 0.864 |
| 7 | OMT is of Added Value to Patients | Value of OMT to Patients | 0.829 |
| 8 | Encourage Students to Use OMT | Encourage Students to Use OMT | 0.861 |
| 9 | OMT Not too time Consuming | OMT too time consuming | -0.854 |
| 10 | Limitation of OMT to use in Musculoskeletal Complaints | OMT limited to Use in Musculoskeletal Complaints | 0.828 |
| 11 | Confidence in OMT Skills | Not Confident with OMT Skills | -0.772 |
| 12 | OMT is Valuable | Believe OMT Valuable | 0.754 |
| 13 | Application of Osteopathic Principles | I Apply Osteopathic Principles | 0.731 |

Table 1. Factors - Determined by items with absolute value factor loading > 0.7

Regression-Based Analysis of Variance:

The demographic information from the first section of the survey allowed a separation of the subjects into different populations based on school, gender, practice type, residency type, and year of graduation. A regression-based analysis of the variance was performed in order to establish if differences between the populations could account for the differences that were being seen in the data. In other words, it estimated the coefficients of the linear equation involving one or more independent variables (i.e. gender, school, etc) to best predict the value of the dependent variable (pre/post group). The data was initially run with all of the groups included in the analysis. The collinearity statistics and correlation indices of each group were reviewed for each factor and it was determined that the year of graduation group had high intercorrelation with the other data. The analysis was then repeated omitting the year of graduation group. The results were examined and the following factors showed a statistically significant difference ($p \leq 0.05$) between the pre and post groups: Factor 5 (Sufficient Training), Factor 6 (Value in Practice Building) and Factor 7 (Value to Patients). Close review of the demographic variables showed that Factor 5, although having a p value significantly less than 0.5 was heavily influenced by the type of practice ($p \leq 0.05$) as well as type of residency ($p = 0.012$). Factor 6 was similarly influenced by residency type and medical school, both having p values ≤ 0.001 , practice type ($p = 0.009$), and gender ($p = 0.001$). Factor 7 showed a similar influence by residency type, practice and medical school all of which had p values significantly less than 0.05. Factors 1 and 8 (Belief in Osteopathic

Principles and Encourage Students to Use OMT) approached significance with p values of 0.106 and 0.296 respectively. Close examination of the demographic values indicate that gender may have attributed to the difference since the p value = 0.005. All other factors showed no statistically significant differences between groups. These findings are summarized in Tables 2 through 4.

| Model | Sum of Squares | df | Mean Square | F | Sig |
|-------------------|-----------------------|-----------|--------------------|----------|------------|
| Regression | 31.798 | 5 | 6.360 | 69.523 | .000 |
| Residual | 2.744 | 30 | .091 | | |
| Total | 34.542 | 35 | | | |

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig |
|-------------------------------------|------------------------------------|------------------|----------------------------------|----------|------------|
| | B | Std Error | Beta | | |
| Constant | -2.480 | .351 | | -7.058 | .000 |
| ACGME or AOA Residency | -.307 | .115 | -.155 | -2.678 | .012* |
| Primary or Specialty Care | 1.979 | .112 | 1.010 | 17.724 | .000* |
| TCOM or Other Medical School | -.210 | .104 | -.107 | -2.021 | .052 |
| Gender | .087 | .131 | .035 | .665 | .511 |
| Pre or Post | .107 | .102 | .054 | 1.046 | .304 |

Table 2 – Linear Regression of Factor 5 (Sufficient Training). Demographic variables with statistically significant effects on factor 5 are marked with an asterisk (*).

| Model | Sum of Squares | df | Mean Square | F | Sig |
|-------------------|-----------------------|-----------|--------------------|----------|------------|
| Regression | 34.903 | 5 | 6.981 | 148.080 | .000 |
| Residual | 1.414 | 30 | .047 | | |
| Total | 36.317 | 35 | | | |

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig |
|-------------------------------------|------------------------------------|------------------|----------------------------------|----------|------------|
| | B | Std Error | Beta | | |
| Constant | -3.627 | .252 | | -14.380 | .000 |
| ACGME or AOA Residency | .635 | .082 | .179 | 4.429 | .000* |
| Primary or Specialty Care | -.223 | .080 | -.111 | -2.778 | .009* |
| TCOM or Other Medical School | 2.003 | .075 | .991 | 26.854 | .000* |
| Gender | .332 | .094 | .131 | 3.531 | .001* |
| Pre or Post | -.052 | .073 | -.026 | -.717 | .479 |

Table 3 – Linear Regression of Factor 6 (Value of OMT in Practice Building).
Demographic variables with statistically significant effects on factor 6 are marked with an asterisk (*).

| Model | Sum of Squares | df | Mean Square | F | Sig |
|-------------------|-----------------------|-----------|--------------------|----------|------------|
| Regression | 34.950 | 5 | 6.990 | 186.302 | .000 |
| Residual | 1.126 | 30 | .038 | | |
| Total | 36.076 | 35 | | | |

| Model | Unstandardized Coefficients | | Standardized Coefficients | T | Sig |
|-------------------------------------|-----------------------------|-----------|---------------------------|---------|-------|
| | B | Std Error | Beta | | |
| Constant | -3.692 | .225 | | -16.406 | .000 |
| ACGME or AOA Residency | 2.131 | .073 | 1.049 | 29.006 | .000* |
| Primary or Specialty Care | -.298 | .071 | -.149 | -4.164 | .000* |
| TCOM or Other Medical School | .295 | .067 | .147 | 4.437 | .000* |
| Gender | .052 | .084 | .021 | .626 | .536 |
| Pre or Post | .081 | .065 | .040 | 1.238 | .225 |

Table 4 - Linear Regression of Factor 7 (Value of OMT to Patients). Demographic variables with statistically significant effects on factor 7 are marked with an asterisk (*).

ANOVA

Once the factors were established, one way ANOVA were carried out for each factor comparing the pre and post groups. None of the pre-post comparisons met the alpha level established for significance ($\alpha \leq .05$). Only factors 3 (Satisfaction with OMT Use), 7 (Value of OMT), 8 (Encourage Students to use OMT) and 9 (OMT Not Time-Consuming) came close to showing statistical changes between the pre and post groups. These findings are contained in Table 5.

| | Trends | ANOVA P value |
|-----------------------------------------------------|---------------|----------------------|
| Factor 1 Belief in Osteopathic Principles | Same | .926 |
| Factor 2 Student Interest in OMT | Same | .844 |

| | | |
|-------------------------------------------------------------------------------|------------|------|
| Factor 3 Satisfaction with the Level of Use of OMT | Decrease * | .503 |
| Factor 4 Poor Reimbursement for OMT | Same | .866 |
| Factor 5 Sufficient Training | Increase | .598 |
| Factor 6 OMT Valuable in Practice Building | Same | .811 |
| Factor 7 Value of OMT to Patients | Increase * | .386 |
| Factor 8 Encourage Students to Use OMT | Increase * | .124 |
| Factor 9 OMT not too time consuming | Increase * | .520 |
| Factor 10 Limitation of OMT to use in Musculoskeletal Complaints | Same | .832 |
| Factor 11 Lack of Confidence in OMT Skills | Decrease * | .261 |
| Factor 12 OMT is Valuable | Increase | .600 |
| Factor 13 Application of Osteopathic Principles | Decrease | .608 |

Table 5 – Trends. Trends for each factor that approached statistically significant changes are marked with an asterisk (*).

Trends

Means plots were then examined to identify trends in the data between the pre and post groups. The most significant findings were a decrease in Factor 3 (Satisfaction with the Level of Use of OMT) and Factor 11 (Lack of Confidence in OMT Skills) accompanied by an increase in Factor 7 (Value to Patients), Factor 8 (Encourage Students to Use OMT), and Factor 9 (OMT not too time consuming).

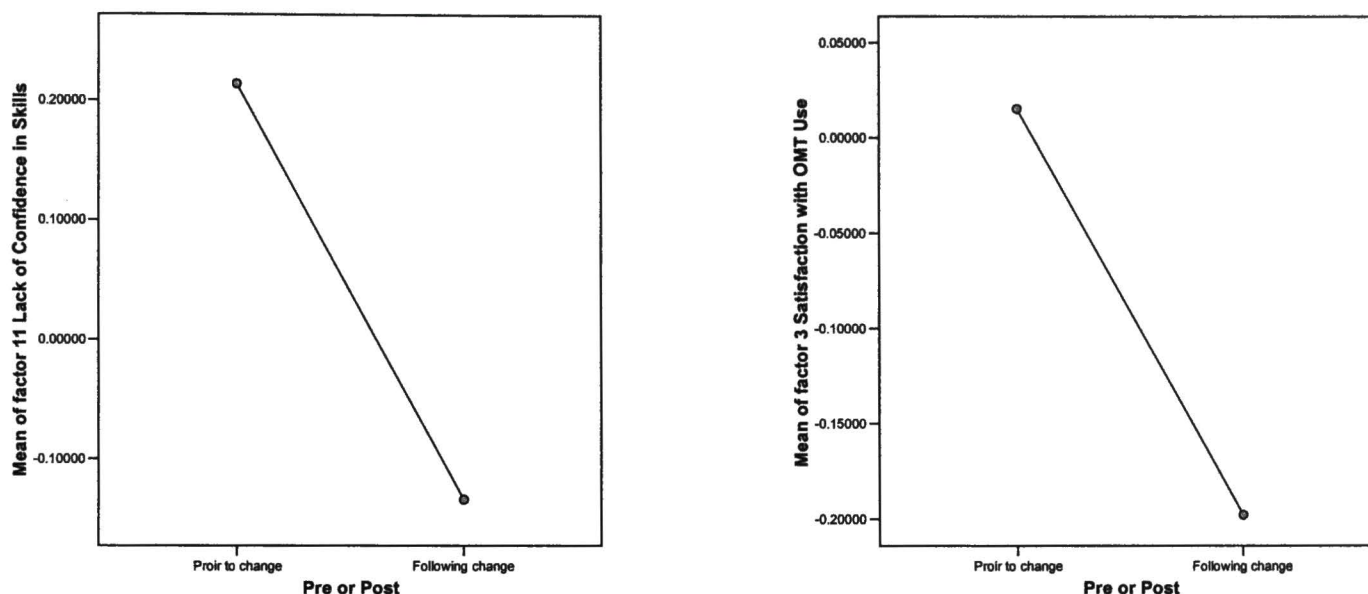


Figure 2. Trends. Pre and post means were plotted to demonstrate the decreasing trends in factors 3 (Satisfaction with OMT Use) and 11 (Lack of Confidence in Skills).

Factors 5 and 12 (Sufficient Training and OMT Valuable) approached statistically significant increases. Factor 13 (Application of Osteopathic Principles) approached being significantly decreased. The rest of the factors: Factor 1 (Belief in Osteopathic Principles), 2 (Student Interest), 4 (Poor Reimbursement), 6 (OMT Value in Practice Building), 10 (Limitation to use of OMT in Musculoskeletal Complaints) remained essentially the same. Table 5 contains a summary of these findings.

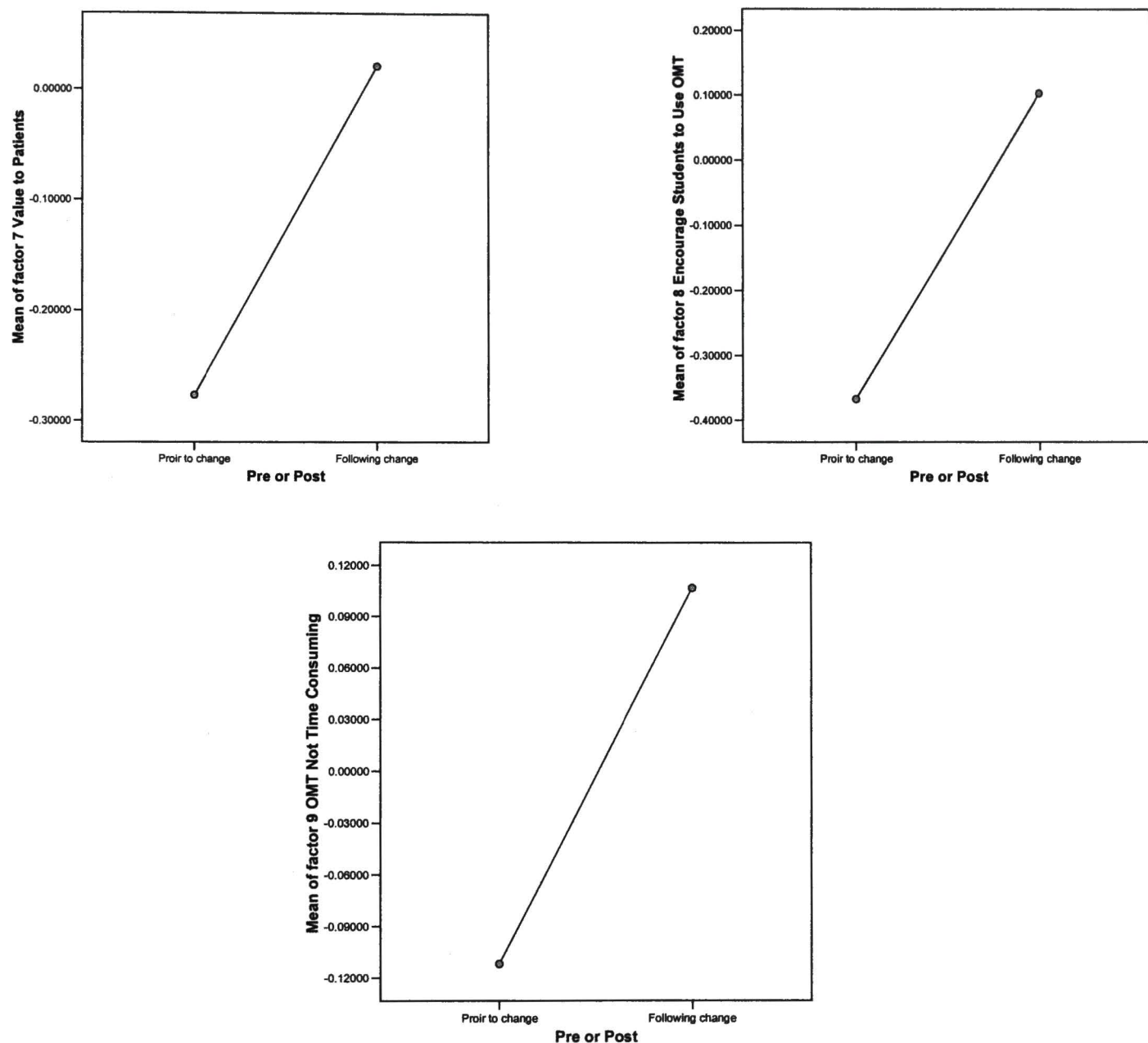


Figure 3. Trends. Increasing trends in factors 7 (Value to Patients), 8 (Encourage Students to Use OMT), and 9 (OMT Not Time Consuming)

Summary of Open-Ended Responses

It is necessary to add that although the survey did not provide an area for additional comments to be made, many of the respondents added qualifying comments to their responses while others wrote about their own beliefs regarding osteopathy. Not only is it necessary to include this data because it is part of the database and explains why some physicians did not respond to some of the statements, but because it provides crucial information regarding osteopathy in the words of the physicians being interviewed. Some of the physicians felt it was important enough to explain their responses. For example, one physician did not respond to the items 6-8 on the survey that focused on the use of OMT and wrote in N/A. However, she also stated that she did not practice OMT because of the nature of her field but that “students from UNT are strongly urged to do so.” Other comments focused on their OMT skills stating they “need updates” or “I had good training but am ‘now outdated.’ ” However, the time issue seemed to be just as important to emphasize. Some physicians declared a strong belief in the value of OMT but stated that they needed “more time to utilize them.” Another wrote that incorporating OMT is “impossible when patients have to be seen in 20 minutes.” Similarly another wrote in next to % OMT usage “Time luxury I don’t have in specialty care.” Several other comments included reimbursement as well as disagreement with what they had perceived to be a limitation of the definition of osteopathic philosophy. For example, one physician wrote “no time, no payments; treat as patient” and then added “use diet, nutrition, osteopathic philosophy is not just OMT.” Others challenged the questions

regarding osteopathic principles stating that they were “only part of the osteopathic philosophy” while another wrote, “these are not necessarily ‘osteopathic’ principles.” One respondent felt that the questionnaire was limited stating that because of the way the questions were asked that he had to agree but that it did not accurately describe his practice. One physician qualified his answer to not incorporating OMT with the comment “It’s not what I do. Sub specialists are quite focused.” While another physician stated, “already incorporate OMT in my practice.” Regarding students’ interest in OMT several added “depending on the medical student” or simply wrote in “varies.” In summary, five factors limiting the use of OMT in the clinical setting seem to be recurring: lack of time and reimbursement, outdated skills, differing ideas on what comprises osteopathy, and type of practice.

LIMITATIONS OF THE STUDY

It is necessary to point out several limitations that played a role in the study. As in most pilot studies, the initial number to be studied was small and the return of the surveys was approximately 50%. In addition, the second mailing had a fewer number because of changes in university-affiliated physicians. Furthermore, a small number of the surveys that were returned were incomplete. The fact that there was a small number affected the data analysis. An analysis of covariance would not have been feasible since the small number would have essentially eliminated any of the findings. Another issue was the fact that the design of the study did not include a comparison group. A comparison group

would have provided more information regarding other possible factors that may have attributed to changes seen between the pre and post groups. The last limitation of the study was inherent to the third year curriculum at UNTHSC-TCOM. Some of the physicians, particularly those in specialty fields, which were surveyed, did not interact with the chosen group of students until their fourth years. This group would have been able to serve as a sort of ad hoc comparison group but the lack of subject identifiers made it impossible.

DISCUSSION

A significant amount of information was obtained by interviewing these 23 osteopathic physicians. Although the differences between the pre and post groups were not statistically significant, a closer look at the mean plots shows relatively clear trends in the pre and post data. An increase in the belief that OMT was of some value to patients was apparent. Furthermore, there was a significant increasing trend to encourage students to use OMT. Two possibly related trends were an increase in the belief that OMT was not as time consuming to be used in busy clinical settings accompanied by a decrease in the level of satisfaction of the amount of OMT used in the clinic. One could question whether the level of satisfaction began to decrease once physicians appreciated the potential of using efficient, effective techniques. The trends could be summarized in the following manner: following the curricular change OMT was viewed as more valuable and less time-consuming and the attendings were less satisfied with the amount of OMT

that was used in their practices. Furthermore, the attendings felt that their OMT skills were improved and that they were encouraging students to use more OMT. Other factors which dealt with more firm and set beliefs such as belief in osteopathic principles, financial reimbursement, and limitation to use of OMT to musculoskeletal complaints, not surprisingly, remained essentially the same.

The linear-regression analysis showed statistical difference in only three factors. Close examination revealed that the statistical significance of Factor 5 (sufficient training) was largely due to whether or not the subject was in the primary or specialty care group. In other words, the statistical significance could not be completely attributed to the changes in curriculum but instead could have been influenced by whether the physician was a primary care physician versus a specialist. Factor 6 (Value in Practice Building) was the second factor that showed a statistical significance between the pre and post groups. However, the significance in this case was attributable to the school and type of residency, or in other words the type of training the subject had had. The last factor, Factor 7 (Value to Patients), was also statistically significant between pre and post groups. In this case, once again, school, type of residency and type of practice all influenced the data.

What this analysis confirms is that many other factors play a role in the subjects' responses. Certain characteristics, such as residency type and school, play a much larger role in how subjects respond to these questions. This supports the notion that it would be a significant accomplishment for thirty days of student interaction to overcome years of

practice and training. On the other hand, it is important to note that the third year curriculum at UNTHSC-TCOM is designed in a manner in which many of the specialists do not interact with students in a clinical setting until their fourth years. This could account for some of the differences that were seen in the data between the primary and specialty care groups.

One of the more positive results is that the survey showed its potential as an instrument that was better at finding differences between our categories that interfered with our data collection. In other words, the survey was an effective instrument in identifying those factors that highly correlated with limited use of OMT.

The physicians' comments were also a positive aspect of this study. Many of the physicians not only chose to emphasize some of the survey items in order to explain some of their responses but also brought up some interesting issues. The question of whether the use of OMT defines whether a physician is practicing osteopathy is valid. Many osteopathic physicians choose to practice in subspecialty fields. Does this necessarily mean that they are not dedicated to osteopathy? Although, certain medical fields and osteopathy seem to be mutually exclusive is it not fair to ask how osteopathy has grown, progressed and adapted to current medical practices? Can the four osteopathic principles coexist with modern medicine? How does an osteopathic surgeon advocate the belief that the body has the innate capacity to heal? How does the neurologist or cardiologist maintain the belief that the body is a unit? The truth about osteopathic philosophy is that although it is what makes us distinct from our allopathic

counterparts, each medical student that reads the four osteopathic principles for the first time incorporates them in their own unique way. Furthermore, it is noteworthy to state that of all of the surveys received, including those that were not matched, none disagreed with the importance and value of osteopathy. What varied were the reasons for how much or how little OMT was used.

CONCLUSIONS

The question regarding the future of osteopathic medicine as a unique and separate school of medicine will probably continue to be debated as long as two separate branches of medicine exist. It is fair to say, however, that there is much interest in taking the necessary steps to assure the survival of osteopathy. By identifying some of what the physicians' themselves have identified as being reasons for not using OMT in their clinic we can now focus on finding ways of trying to overcome them. Numerous medical schools, as well as hospitals with osteopathic internships, have already demonstrated the desire and capacity to make innovative changes to their curricula. Some physicians have begun designing refresher courses for other osteopathic physicians. Some courses are designed to simply review basic techniques whereas others try to teach innovative ways to integrate OMT into a busy practice. Some review courses are designed to focus on techniques specific to common problems encountered in a certain specialty. For example, courses have been designed for gastrointestinal specialists that review

techniques to treat diseases such as peptic ulcer disease to Crohns' disease. The possibilities for change are tremendous.

Although this study showed limited significant changes it is a step in the right direction.

We will only know the effects of the curricular reform on physicians' attitudes and practices by continuing to use survey instruments like the one used in this study. This study was an initial look at the effects of curricular change at one institution. Future studies need to be performed to continue to assess these changes as well as to make changes to the curriculum itself. Furthermore, future surveying of a larger group of physicians, those in University-based as well as private practice, are needed to assess whether school, type of residency training and practice continue to account for these differences. This information will allow those planning future osteopathic medical curricula, at every level, to focus on the areas that are in need of the most change.

However, it may be time for osteopathic physicians to take a step back and look at the profession and how it has met the needs and challenges of the current healthcare system.

On the other hand, the answer to the question of whether the unique identity of the osteopathic physician will survive may lie in the definition of what osteopathy means to each individual D.O. Perhaps we are asking the wrong questions. Perhaps we need to start asking "how do you practice osteopathy in your particular clinical setting?" We may be surprised to find that osteopathy is alive and well.

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