

ORIGINAL RESEARCH

Burnout, Depression, Non-Modifiable Factors, & Work Environment in Osteopathic Family Medicine Residents

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KEYWORDS:

Burnout

Resident Wellness

Work-Hour
Restrictions

Family Medicine

Osteopathic
Medicine

Depression

Objective: To improve the well-being of residents, several initiatives, including work-hour restrictions, have been implemented. The efficacy of these initiatives has not been widely studied. As such, the purpose of the current study was to evaluate burnout and depression in Osteopathic family medicine residents, examine non-modifiable factors influencing burnout, and assess the relationship of the work environment as it relates to burnout.

Methods: The current study used a cross-sectional study design and an anonymous, web-based survey to assess burnout and depression in Osteopathic family medicine residents. Residents received invitations to participate in the survey via e-mail. The survey was created specifically for the current study.

Results: In total, 316 Osteopathic family medicine residents completed the survey. Burnout was present in 69.0% of residents, and 87.9% met criteria for depression. Females were 1.8 times more likely than males to be burned out. No significant difference was found for overall burnout when examining, age, sexual orientation or relationship status. Residents who worked more than 80 hours per week had increased emotional exhaustion and decreased personal accomplishment. Finally, 23.0% of residents reported being very satisfied about balance between personal and professional life and 58.3% reported being very satisfied about family medicine as a career choice.

Conclusions: The current study suggested that Osteopathic family medicine residents experience high burnout and depression. These negative constituents of mental well-being still exist despite the changes instituted for work-hour restrictions. Additional research is needed to determine effective interventions for this ongoing problem.

INTRODUCTION

Within the past decade, changes have been made to residency training programs to reduce the number of hours worked per week.¹ These work-hour restrictions were implemented to improve the health and well-being of residents and to improve the quality of patient care.¹⁻⁴ Current standards for work hour restrictions are similar between Osteopathic and Allopathic residency programs.^{1,5-6}

After these policies were implemented, scarce research was conducted to examine the efficacy of these changes. From the studies that were conducted, a majority occurring within the first 3-4 years after the restrictions were implemented, a few trends started emerging. First, studies of Allopathic residency programs showed no change in patient mortality following the implementation of these policies in July 2003.^{1,7-9} Secondly, studies did not find a significant difference in burnout when comparing levels before and after the change in work-hour restrictions.^{7-8,10-12} However, one study suggested that, even though the standards for work hours changed according to the Accreditation Council for Graduate Medical Education & The American Osteopathic

Association, changes were not necessarily implemented.^{1,8-9} There appeared to be an underlying culture in which residents were not properly logging all the hours they worked to remain within the new restriction standards.¹ With the recent publicity and awareness regarding burnout, depression, dissatisfaction and suicide among today's physicians, it is evident that these issues are still plaguing the profession.¹²

Three factors are used to assess burnout: emotional exhaustion (EE), depersonalization (DP), and decreased sense of personal accomplishment (PA).^{9,11-16} Burnout has been associated with poor work performance, increased error rate, and decreased commitment.^{11,17} It has also been associated with increased health problems, substance abuse, suicidal ideation, and depression.¹⁰⁻¹¹ These factors can greatly affect health care, leading to increased medical errors that can affect patient morbidity and mortality.

With the rising rates of physician dissatisfaction and suicide, it has become evident that more research is needed to address this issue. Specifically, few studies have investigated family medicine or Osteopathic residency programs.¹⁰⁻¹¹ Therefore, the purpose of the current study was to evaluate burnout and depression in Osteopathic family medicine residents, examine non-modifiable factors influencing burnout, and assess the relationship of the work environment as it relates to burnout.

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METHODS

SURVEY DISTRIBUTION

For the current study, a cross-sectional study design was used to assess burnout and depression in Osteopathic family medicine residents using an anonymous, web-based survey. In January 2015, the American College of Osteopathic Family Physicians (ACOF) was approached about helping with the distribution of our survey because it has a complete list of e-mails for all current Osteopathic family medicine residents and because residents must subscribe to ACOF. The ACOF was emailed with a prompt and link to the survey and asked to forward the e-mail to all Osteopathic family medicine residents. To avoid response bias, the phrase “personal and professional satisfaction” was used in the survey prompt instead of burnout and depression. Residents interested in participating in the survey were asked to click on a link that forwarded them to an informed consent page. After reading the linked page containing the informed consent and providing consent, the residents were taken to the survey questions. The local institutional review board and ethics committee approved all study procedures.

Because the above distribution method resulted in a poor response rate, we e-mailed the Osteopathic program directors directly and asked them to invite their residents to complete the study survey. When contacting the program directors, we emphasized that the survey would be anonymous, and results would not be seen by the resident’s program director or anyone related to the program. The entire data collection period ran for a total of five months, during which time the residents could complete the survey.

As an additional incentive for all residents who completed the survey, residents were given the opportunity to be entered into a drawing. By providing their e-mail address through a secure website, they would be entered to win an Amazon gift card; 10 gift cards were available (2 for \$100, 4 for \$50, and 4 for \$25).

SURVEY MEASURES

The study survey consisted of 32 questions and took approximately 5-7 minutes to complete. All survey questions were required, however, respondents were allowed to put “refuse to answer” for any questions they did not feel comfortable answering. Basic demographic questions were included requesting information about gender, age, year in training, relationship status, the number of children and sexual orientation. The Maslach Burnout Inventory-Human Services Survey (MBI-HSS)¹³ was also included to quantify burnout in survey respondents. This scale assesses three specific variables to quantify burnout: EE (9 questions), elevated DP (5 questions) and decreased sense of PA (8 questions). These three variables were analyzed as both categorical and continuous variables. The MBI-HSS was graded on a 7-point scale with 1 being “never” and 7 being “every day,” resulting in the following ranges: EE (0 to 63 points), DP (0 to 35 points), and PA (0 to 56 points). Arithmetic mean was used to find the average for each subscale using each resident’s response to questions within that subscale. Categorical variables, based on a cut-off provided by the developer, were used to classify survey respondents as having low, moderate, or high on the burnout scale.¹³ For the current study, we created a burnout category which has been used and validated in previous studies.¹⁴⁻¹⁵ This included individuals with high EE or decreased the sense of PA, which allowed us to look more closely at the overall burnout rate.

The Patient Health Questionnaire (PHQ-9)¹⁸ was also included in the study survey to assess depression and severity of depression. Responses to this 9-question survey are scored on a scale of 0 for “not at all” to 3 for “nearly every day,” with ranges from 0-27 points. The following cutoffs were used in the current study to classify depression: minimal (1-4 points), mild (5-9 points), moderate (10-14 points), moderately severe (15-19 points), and severe (20-27 points). We used categorical and continuous variables for our statistical and descriptive analyses. Responses to this part of the survey were not meant to diagnose someone with “clinical depression,” but rather to provide a quantitative measure of depression.

Questions were also included in the study survey to assess the resident’s work environment. These questions, which used a Likert-like scale, included factors such as stress level at work and how the 80-hour work limit affected the resident’s stress level and performance. We also included questions about on-call schedule, night/weekend schedule, work schedule, and sleeping habits. Finally, we included questions that asked residents about personal and professional life satisfaction. Specifically, using a Likert scale, residents were asked how satisfied they were with the balance between their personal and professional life and how satisfied they were with their choice of family medicine as a career.

STATISTICAL ANALYSIS

SPSS version 18.0 predictive analytic program (IBM, Chicago, IL) was used for all statistical analyses. Percentage, mean, confidence interval (CI), and standard deviation (SD) were reported when applicable. A χ^2 test of independence was performed to examine the relationship between burnout and gender, age, relationship status, sexual orientation, depression, on-call schedule, night/weekend schedule, work schedule, and sleeping habits. To further examine the subscales of burnout (EE, DP, and PA), either a 1-way analysis of variance in conjunction with Tukey posthoc comparisons or an independent samples t-test was used for comparisons between burnout subscales and gender, age, relationship status, sexual orientation, depression, on-call schedule, night/weekend schedule, work schedule, and sleeping habits. Cronbach α was used to examine the reliability of the scales used in the current study. A $p \leq .05$ was considered statistically significant.

RESULTS

RESIDENT CHARACTERISTICS

Approximately 1700 Osteopathic family medicine residents were e-mailed an invitation to complete the study survey. From this total, 316 residents responded to the survey, resulting in a response rate of 18.6%: 145 residents responded from the initial e-mail invitation sent by the ACOF, and 171 responded to the e-mail sent by the Osteopathic program directors. Table 1 (page 14) presents the demographic characteristics of the residents who responded to our survey. Approximately an equal number of male (45.9%) and female residents completed our survey, with a large percentage (87.3%) falling within the 26 to 35 years age group. We had a slightly higher number of first-year residents (38.3%) respond than second-year or third-year residents (30.4% and 31.3%). Further, 60.8% of residents were married or living as married, and the majority (64.6%) had no children. Finally, 6.0% of residents self-identified as lesbian / gay / bisexual / asexual.

TABLE 1:
Characteristics of Osteopathic Family Medicine Residents (N=316)

DEMOGRAPHIC CHARACTERISTICS		No. (%)
Gender	Male	145 (45.9)
	Female	169 (53.5)
	NA ^a	2 (0.6)
Age, y	26 - 35	276 (87.3)
	36 - 45	21 (6.6)
	46 - 55	12 (3.8)
	Over 56	2 (0.6)
	NA ^a	3 (0.9)
Year in Training	OGME I	121 (38.3)
	OGME II	96 (30.4)
	OGME III	99 (31.3)
Relationship Status	Never Married	116 (36.7)
	Married / Living as Married	116 (36.7)
	Separated / Divorced	5 (1.6)
	NA ^a	3 (0.9)
Sexual Orientation	Heterosexual	292 (92.4)
	Lesbian/Gay/Bisexual/Asexual	19 (6.0)
	NA ^a	5 (1.6)

^a Refers to the number of residents who completed the survey but did not provide an answer to this specific question or responded "refuse to answer." Abbreviation: OGME, Osteopathic Graduate Medical Education.

BURNOUT & DEPRESSION

Based on the MBI-HSS criteria, 218 (69.0%) of Osteopathic family medicine residents were burned out. Figure 1 displays the frequency distribution of the burnout subscales. Specifically, 192 residents (68.6%) had high EE, 171 (60.6%) had high DP, and 205 (75.1%) had a low sense of PA. Mean (SD) scores for EE (33.33 [11.67] points) and DP (15.66 [6.73] points) were both within the high range, and PA (43.52 [7.60] points) was in the low range.

In the current study, 240 residents (87.9%) met the PHQ-9 criteria for some level of depression. Specifically, 33 (12.1%) residents were not depressed, 125 (45.8%) had minimal depression, 61 (22.3%) had mild depression, 28 (10.3%) had moderate depression, 16 (5.9%) had moderately severe depression, and 10 (3.7%) had severe depression.

NON-MODIFIABLE FACTORS INFLUENCING BURNOUT

GENDER

When comparing burnout and gender, 90 (62.1%) males and 127 (75.1%) females met criteria for burnout. The odds of having burnout were 1.8 times greater for females than for males (95% CI, 1.14-2.99; p=.01). The mean (SD) EE in males (31.14 [11.91] points) was statistically different than in females (35.15 [11.19] points, t(277)=2.90, p=.004). The mean DP and PA were not significantly different for males and females (15.62 vs 15.68 points and 42.62 vs 44.29 points).

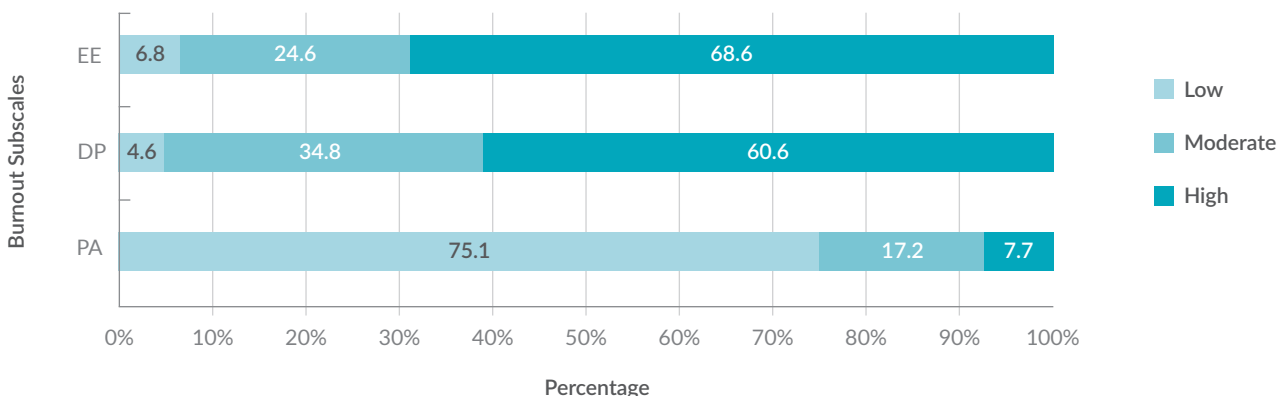
AGE & SEXUAL ORIENTATION

No statistically significant difference was found for burnout between the different age groups ($\chi^2(3, 311)=5.67, p=.13$) or based on sexual orientation ($\chi^2(1, 311)=0.02, p=.89$). Examination of the burnout subscales also found no statistical differences for age ($\chi^2(3, 277)=158.44, p=.43$ for EE; $\chi^2(3, 279)=95.68, p=.25$ for DP; $\chi^2(3, 270)=71.31, p=.98$ for PA) or sexual orientation ($\chi^2(1, 278)=39.66, p=.90$ for EE; $\chi^2(1, 280)=37.04, p=.15$ for DP; $\chi^2(1, 271)=24.49, p=.86$ for PA).

RELATIONSHIP STATUS

No statistically significant difference was found for overall burnout between the different relationship status groups ($\chi^2(2, 313)=3.17, p=.21$). Examination of the burnout subscales

FIGURE 1:
Frequency Distribution of the Burnout Subscales of Emotional Exhaustion (EE), Depersonalization (DP), and Personal Accomplishment (PA)



found a statistical difference for EE ($F(2, 277)=6.01, p=.003$), DP ($F(2, 269)=4.77, p=.009$), and PA ($F(2, 275)=5.72, p=.004$). A post-hoc Tukey multiple comparisons test found those who were never married reported the highest DP, and those who were divorced or separated reported the lowest DP. Those who were married or living as married reported the highest PA, and those who were never married reported the lowest PA. Finally, those who were divorced or separated reported the highest EE, and those who were married or living as married reported the lowest EE.

DEPRESSION

When comparing burnout and level of depression, residents with higher levels of depression were more likely to have burnout than those who were not depressed ($\chi^2(5, 273)=64.17, p<.001$). Examination of the burnout subscales found a statistical difference for all three subscales: EE ($F(5, 261)=39.92, p<.001$), DP ($F(5, 261)=11.65, p<.001$), and PA ($F(5, 253)=6.54, p<.001$). A post-hoc Tukey multiple comparisons test found that those residents who had higher levels of depression reported more EE and DP and less PA.

WORK ENVIRONMENT & BURNOUT

When asked if the 80-hour work limit had improved their overall stress level, 65 residents (21.6%) indicated that they strongly agreed, 87 (28.9%) agreed, 102 (33.8%) were neutral, 31 (10.3%) disagreed, and 16 (5.3%) strongly disagreed. When asked if the 80-hour work limit had improved their overall work performance, 55 (18.3%) strongly agreed, 86 (28.6%) agreed, 111 (36.9%) were neutral, 33 (11.0%) disagreed, and 16 (5.3%) strongly disagreed.

Table 2 summarizes survey responses about work environment factors, including on-call schedule, night/weekend schedule, work schedule, and sleeping habits. In general, 73.5% of Osteopathic family medicine residents were on call less than five days per month, and 69.7% worked nights/weekends less than five days per month. For work schedule, 58.3% reported working between 60-80 hours. For sleeping habits, 78.6% slept between 6-8 hours a night.

ON-CALL SCHEDULE

No statistically significant difference was found between burnout and the different on-call schedule groups ($\chi^2(3, 309)=1.46, p=.69$). Examination of the burnout subscales found a statistical difference for EE ($F(3, 274)=3.47, p=.02$), but no difference for DP ($F(3, 276)=0.98, p=.40$) or PA ($F(3, 268)=0.30, p=.83$). Post-hoc comparisons found that residents who were on call for more than 16 days per month had the highest EE.

NIGHT/WEEKEND SCHEDULE

No statistically significant difference was found between burnout and the different night/weekend schedule groups ($\chi^2(3, 310)=2.52, p=.47$). Examination of the burnout subscales also found no statistical differences ($F(3, 274)=1.14, p=.35$ for EE; $F(3, 276)=1.52, p=.21$ for DP; $F(3, 268)=1.41, p=.24$ for PA).

WORK SCHEDULE

No statistically significant difference was found between burnout and the different work schedule groups ($\chi^2(3, 312)=3.15, p=.37$).

TABLE 2:

Work Environment Factors in Osteopathic Family Medicine Residents (N=316)

WORK ENVIRONMENT FACTOR		No. (%)
On-call Schedule (per month), d	< 5	227 (73.5)
	5 - 10	74 (23.9)
	11 - 15	7 (2.3)
	> 16	1 (0.3)
Night / Weekend Schedule (per month), d	< 5	216 (69.7)
	5 - 10	86 (27.7)
	11 - 15	6 (1.9)
	> 16	2 (0.6)
Work Schedule (average per week), h	> 80	12 (3.8)
	60 - 80	182 (58.3)
	40 - 59	113 (36.2)
	20 - 39	5 (1.6)
Sleep Habits (average per night), h	> 8	7 (2.2)
	7 - 8	120 (38.5)
	6 - 7	125 (40.1)
	5 - 6	48 (15.4)
	< 5	12 (3.8)

Examination of the burnout subscales found a statistical difference for EE ($F(3, 276)=4.40, p=.005$) and PA ($F(3, 269)=2.60, p=.05$), but not for DP ($F(3, 278)=1.69, p=.17$). Post-hoc comparisons found that residents who worked more than 80 hours per week had the highest EE, and those who worked between 40-59 hours had the lowest EE. Residents who worked 60-80 hours a week had the highest PA, and those who worked 20-39 hours a week had the lowest PA.

SLEEPING HABITS

No statistically significant difference was found between burnout and the different sleeping habits groups ($\chi^2(4, 312)=7.41, p=.12$). Examination of the burnout subscales found a statistical difference for EE ($F(4, 275)=5.83, p<.001$), but no differences for DP ($F(4, 277)=1.95, p=.10$) or PA ($F(4, 268)=0.41, p=.80$). Post-hoc comparisons found that residents who slept less than five hours per night had the highest EE, and those who slept more than eight hours had the lowest EE.

PERSONAL AND PROFESSIONAL LIFE SATISFACTION

For survey questions about balance between personal and professional life, 70 (23.0%) reported being very satisfied, 127 (41.6%) reported being somewhat satisfied, 24 (7.9%) reported feeling neutral, 60 (19.7%) reported being somewhat dissatisfied, and 24 (7.9%) reported being very dissatisfied. For survey questions about career satisfaction, 176 residents (58.3%) reported being very satisfied, 70 (26.2%) reported being somewhat satisfied, 15 (5.0%) reported being ambivalent, 23 (7.6%) reported being somewhat dissatisfied, and 9 (3.0%) reported being very dissatisfied.

RELIABILITY OF THE SCALES

A Cronbach α correlation coefficient was used to assess the internal consistency of the scales. For the MBI-HSS, the Cronbach α for the burnout score was 0.93. The Cronbach α for the three burnout subscales was 0.92 for EE, 0.82 for DP, and 0.82 for PA. The PHQ-9 had a Cronbach α of 0.90.

DISCUSSION

The purpose of the current study was to evaluate burnout and depression in Osteopathic family medicine residents, examine non-modifiable factors influencing burnout, and assess the relationship of the work environment as it relates to burnout. To our knowledge, since changes were implemented for work-hour restrictions, no studies have examined Osteopathic family medicine resident burnout. Therefore, results of the current study may provide additional information about the consequences of those changes and how they have impacted Osteopathic family medicine residents and, as such, the patients that they care for.

In the current study, 69.0% of Osteopathic family medicine residents met the MBI-HSS criteria for burnout. For the burnout subscales, 68.6% of residents had high EE, 60.6% had high DP, and 75.1% had a low sense of PA. Previous research has suggested that overall burnout rates in all resident specialties range from 27%-75%.^{2-4,10} Martini et al¹⁹ found that the overall rate of burnout was 27% in family medicine residents. Results of the current study suggested current Osteopathic family medicine residents had a higher rate of burnout than residents in previous studies. Given that this is the first study specifically targeting Osteopathic family medicine residents more studies are needed to solidify the actual rates of burnout in this population.

Several factors may explain our higher burnout results. For example, current residents may have increased time constraints from work-hour restrictions because they are required to perform the same amount of work in less time. As a result, work not completed during work hours may be expected to be done on the resident's own time, causing increased pressure and stress.

Additionally, current residency programs may be enforcing standards for work hours and other restrictions, whereas previous research seemed to indicate these standards were not being followed.⁹ Therefore, enforcement of these standards could be contributing to the increased burnout we observed because residents may be precluded from some events or educational opportunities (such as performing time-sensitive procedures or missing interesting cases) due to work-hour or other time restrictions.

When comparing burnout results with the non-modifiable factors of gender, age, sexual orientation, and relationship status, some interesting results emerged. Gender significantly impacted burnout and all three burnout subscales. Female residents were 1.8 times more likely to be burned out compared with male residents. Other studies have shown mixed results regarding burnout and gender, but there is no current consensus.¹⁰⁻¹¹ When comparing burnout with age and sexual orientation, we found no significant differences. The sexual orientation finding contradicts previous research, which suggests that sexual minorities are at increased risk of burnout due to minority stress.²⁰ Finally, for relationship status, we found no differences for burnout, but there were significant differences for the burnout subscales. Specifically, residents who were never married had the highest DP and the lowest PA. Residents who were married or living as married had the highest PA and the lowest EE, and those who were divorced or separated reported the lowest DP and the highest EE. Research is mixed about the role of relationship status and burnout.¹⁰⁻¹¹ More research is needed to elucidate the potential differences.

When evaluating depression in the Osteopathic family medicine residents of the current study, 87.9% of residents met criteria for some level of depression, and 3.7% were classified as having severe depression. Our analyses found a higher rate of burnout in those residents who were depressed, and comparisons with the burnout subscales were also statistically significant. These results are comparable to a study examining Osteopathic medical students that found 77.7% of students met criteria for some level of depression, and 2.4% had severe depression.²¹

When comparing burnout with the work environment, we found no statistical differences. However, when comparing the burnout subscales with the work environment, some interesting trends emerged. For on-call schedule, residents with the highest number of on-call days had the highest degree of EE. Residents who worked more than 80 hours per week also had the highest EE, while those working 40-59 hours had the lowest. Personal accomplishment was highest in residents who worked 20-39 hours a week and lowest in those who worked 60-80 hours. Finally, for sleeping habits, residents who slept more had lower EE. This finding was consistent with previous research that showed decreased sleep was related to high burnout in both medical students and residents.^{1,22}

The current study had several limitations, including response bias, unacceptability bias, and selection bias. Residents who were unhappy may have been more responsive and motivated to return our study survey, despite our efforts to minimize these response biases. Therefore, the survey responses from participating residents may not represent the overall Osteopathic family medicine population. Residents who did not respond to our survey may have had either higher or lower burnout rates compared with those who did respond. Because depression and burnout are viewed in a negative light, those residents who did respond to our survey may not have been completely honest when answering survey questions due to feelings of embarrassment. This unacceptability may have been especially problematic for those residents who are familiar with the tools used to screen patients for depression. As our study design was cross-sectional, inferences about the progression of mental health during medical education may be limited.

Future research is needed to further elucidate several important factors. First, studies should examine why Osteopathic family medicine residents appear to have higher rates of burnout than residents in previous research, and what specific factors may be contributing to these higher rates. Further research is also needed to better examine the role that non-modifiable factors play in regard to burnout and how specific interventions may be needed to target individual subgroups of the population. Finally, more research is needed in regards to the new work environment that our residents are functioning within and how this environment is impacting current residents' well-being.

CONCLUSIONS

Results from the current study suggested that factors, including non-modifiable factors and work environment, may impact burnout in Osteopathic family medicine residents. As our findings suggest and despite mandated work-hour restrictions, burnout and depression still seem to be a prevailing issue experienced by today's residents. With the rising rates of physician dissatisfaction and suicide, it becomes imperative to discover ways of combating this serious issue.

FUNDING / SUPPORT:

The current study was funded by a Still-OPTI grant.

ACKNOWLEDGEMENTS:

The authors would like to extend their deepest gratitude to the following individuals: Anita Franklin for assistance with survey set-up, Dr. Timothy Buffey for serving as our mentor and the Still-OPTI for providing us with funding.

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anonymous as possible, the email was sent with assistance from the ACOFP. The email contained a web link to the online survey. The survey was sent to approximately 1400 individuals and was available online for four weeks. Participation in the study was completely voluntary. All results were anonymous, with no personal identifiers or email addresses linked to survey answers. As an incentive to increase participation in the questionnaire, participants had the opportunity to enter to win a \$50.00 gift certificate to Amazon. Purchase of the gift card was self-funded. One randomly selected individual received the gift card.

Statistical analysis was performed using SAS software version 9.3. Analysis included chi-square tests of independence and Fisher's exact tests. P values less than 0.05 were considered statistically significant. Key comparisons were made between family medicine residents of different genders, age groups, marital status, and year in residency.

RESULTS

DEMOGRAPHICS

The survey was sent to approximately 1400 individuals, of whom, 172 responded (approximately 12%). Table 1 shows the demographic characteristics of participants.

PERSONAL USE OF NFP

When it came to the personal use of NFP, 76% of participants did not currently use NFP, while 13% did currently use some form of NFP (compared to the national average of 1.1%⁹) and 11% replied that it was not applicable. Marital status was found to be significantly associated with personal use of NFP ($P=0.03$). Married family medicine residents were almost three times more likely to use NFP than their non-married counterparts.

The responses were slightly different when participants were asked if they had ever used NFP. Sixty-eight percent had never used NFP, 23% had used NFP in the past (compared to the national average of 21%⁹), and 9% responded not applicable. Again marital status and past use of NFP were statistically significant ($P=0.008$). Family medicine residents who have used NFP in the past were 1.5 times more likely to be married.

KNOWLEDGE AND MANAGEMENT OF NFP

When asked how familiar osteopathic family medicine residents were with NFP, 56% responded somewhat familiar, 34% stated they were knowledgeable, and 10% stated not at all familiar. Second and third year residents were significantly more likely to be knowledgeable in NFP than their first year counterparts ($P=0.03$). As the year of residency increased, fewer residents indicated not being familiar with NFP.

Residents were also asked how comfortable they would feel discussing the possible use of NFP for contraception with a patient. Half (49%) of the responders stated "somewhat comfortable." Twenty percent stated "very comfortable," 17% responded "very uncomfortable," and 14% were neutral. It was found that married family medicine residents were significantly ($P=0.0185$) more comfortable discussing the possible use of NFP for contraception than their non-married counterparts. Nearly 30% of married residents were "very comfortable" versus only 8% of non-married resi-

TABLE 1:

Demographic Characteristics of Osteopathic Family Medicine Residents (n = 172)

DEMOGRAPHIC CHARACTERISTICS		No. (%)
Gender	Male	38
	Female	62
Age	20 - 25	1
	26 - 30	56
	31 - 35	30
	36 - 40	6.5
	41 - 45	3
	46 +	3.5
Relationship Status	Married	57
	Single	34
	Co-habiting	7
	Divorced	2
	Widowed	0
Year in Residency	First	25
	Second	34
	Third	36
	Fourth	5

dents. It was also found that the more familiar a resident is with NFP, the more comfortable he/she is discussing the subject with patients ($P<0.001$).

When asked if a patient had ever asked them about NFP, a majority (67%) of family medicine residents responded "no." However, there was a statistical significance ($P=0.01$) between the year in residency and answer to this question. The further along a resident was in training, the more likely a resident was to have had a patient inquire about NFP. It was also found that residents between the ages of 31-35 were 1.6 times more likely to have had a patient ask them about NFP than those residents aged 26-30 ($P=0.04$).

When family medicine residents were asked how effective they believe NFP is for contraception compared to other forms of birth control, 45% thought significantly less effective, 39% stated somewhat less effective, 15% stated similarly effective, and 1% responded more effective. Interestingly, when asked how effective they thought NFP was for achieving pregnancy, 56% of family medicine residents responded somewhat effective, 43% stated very effectively, and 1% stated not at all effective.

Two of the survey questions were used with permission from Stanford.³ The first question asked residents if they ever mention NFP when providing contraceptive management, with a majority (47%) of residents responding “never.” Another 23% mention NFP, but with reservations. Twenty-seven percent of residents stated they mention NFP as a viable option to selected patients while 3% mention it as a viable option to all of their patients. When asked about providing advice on achieving pregnancy, interestingly, about one-third (36%) of residents mention NFP as a viable option for selected patients and another 27% mention it as a viable option for all patients. Only 25% never mention NFP as an option, and another 12% mention it with reservations. Female family medicine residents were found to be 2.8 times more likely ($P=0.002$) to mention NFP as an option for achieving pregnancy than male residents.

When it came to plans for incorporating NFP into their future practice, 44% osteopathic family medicine residents were unsure at this time. Another 40% stated they planned to incorporate NFP while 16% stated they had no plans of using it. Female residents were 1.5 times more likely to incorporate NFP into their future practices than male residents ($P=0.03$).

A majority (67%) of residents report that their residency clinic does not have any literature or pamphlets on NFP available to hand out to patients while only 7% stated literature was available. Another 26% of residents were unsure. Again, a majority (78%) of family medicine residents are not familiar with any organizations or instructors of NFP. While 20% are somewhat familiar, and 2% are very familiar. When asked if they would refer a patient interested in NFP to an organization or instructor, 30% of residents stated “yes.” Another 25% stated “maybe” and 4% stated “no.” Forty-two percent of family medicine residents responded they would not know where to refer a patient who was interested in NFP.

MEDICAL SCHOOL & RESIDENCY EDUCATION ON NFP

A majority (56%) of participants stated that less than one hour of their osteopathic medical education was spent discussing NFP. Another 27% stated no time was spent on NFP education while 16% stated between 1-5 hours were spent, and 1% had over 5 hours of their medical education devoted to NFP.

When asked how much time was devoted to their residency training to NFP, 45% of residents responded none. Of those residents in this study that did report some education on NFP, 37% stated they received less than one hour, 16% stated between 1-5 hours, and 2% responded greater than 5 hours.

A little over half (58%) of participants stated that some of their family medicine residency program faculty were familiar with NFP. Another 14% of residents stated none of their faculty was familiar with NFP while 12% responded their entire faculty was familiar. Approximately 15% of residents did not know how familiar their teaching faculty was with NFP.

Interestingly, 45% of participants would like to see their family medicine residency program include NFP in its women’s health curriculum for all residents. Thirty-three percent stated that they would “maybe” want to have NFP included in their residency curriculum, and 11% would like to see it included only for those residents interested in the subject. Another 10% did not want NFP in-

cluded at all in their residency curriculum. There was a significant relationship ($P= 0.04$) between female gender and those desiring NFP curriculum in their residency program. Female participants were 1.7 times more likely to desire that NFP curriculum is included for everyone in their family medicine residency program.

DISCUSSION

Very few studies have examined family medicine residents’ knowledge and management of NFP. To the best of our knowledge, this is the first research that investigated osteopathic family medicine residents’ opinions, knowledge, and education of NFP. Similar to studies performed by Choi and Stanford, this study showed that a majority of resident physicians do not believe that NFP is an effective form of contraception compared to other methods of birth control.^{2,3}

The percentage of osteopathic family medicine residents in this study who discussed NFP as a contraceptive option with patients was similar to that found in a Canadian study by Choi,² but was fewer than that found by Stanford.³ And when it came to discussing NFP as a way to achieve pregnancy, similar results were seen in this study compared to that by Choi.² The similar results between this study and that of Choi may be attributed to the fact that both included resident physicians, whereas the study by Stanford did not. Interestingly, in this study female residents were 2.8 times more likely to mention NFP as an option for achieving pregnancy than male counterparts.

This study has demonstrated that osteopathic family medicine residents have little education or training in NFP. Eighty-three percent of residents stated they had either no training or less than one hour of training in medical school, confirming what had previously been reported by Fehrig.⁵ Again, another 45% stated they had no training on NFP in residency, which is even higher than the 25% reported by Duane.⁶ It is interesting that little time is devoted to NFP education, yet almost half of residents in this study would like to see NFP incorporated into their curriculum, with female residents showing an even greater interest.

This study further confirms the importance of NFP education by demonstrating that the more familiar a resident is with NFP, the more comfortable he or she feels discussing the topic with patients. If more education time could be devoted to NFP, it is likely that family medicine residents would be more comfortable with the topic, and thus, more likely to bring it up in conversation with patients. This study also shows that a large number of osteopathic family medicine residents plan to incorporate or are considering incorporating NFP into their future practice. With a majority of residents potentially counseling women on NFP in the future, it is crucial that residency programs incorporate it into their curriculum. To help increase education on NFP, residents need to become more aware of organizations in their area that can teach patients, as well as provide literature to those that are interested. In this study, 42% of residents did not know where to refer a patient who was interested in NFP, which is even higher than the 25% reported by Stanford.³ All osteopathic family medicine residents practicing women’s health should be able to address the basics of NFP and know where to refer their patients who desire more information on the subject. Future education of residents should involve the basics of fertility awareness methods, evidence of the efficacy of

these methods, and the physiology behind them. Education could also include further instruction by certified practitioners and teachers of the different NFP methods.

A weakness of this study was that it only involved a small percentage (12%) of osteopathic family medicine residents, and may not reflect the true majority of residents' views. Those residents that did choose to respond to the survey may have done so because of a bias or personal interest in the subject. After all, this study had a larger number of people who admitted to using or having used NFP compared to the national average. In this study, 13% of responders were currently using NFP and another 26% had used it at some point in the past. Again, these values are higher than the national average as reported in the 2006-2008 National Survey of Family Growth, in which 1.1% of U.S. women were currently using fertility based methods and another 21% had used it at some point.⁹ Another limitation of the study may involve the majority of responders being female (62%). Female family medicine residents may have been more interested in the subject of the questionnaire, and thus, more likely to respond to it. Again, leaving the results of this questionnaire possibly biased towards female residents' views.

Future investigations could involve obtaining greater participation, by including both osteopathic family medicine residents and osteopathic obstetrics and gynecology (Ob-Gyn) residents in the study. It would also be interesting to survey participants on their religious preferences, as done in the study by Lawrence,⁴ to see if residents' religious background impacts their knowledge and views of NFP.

CONCLUSION

Only a small proportion of family medicine residents in this study discuss NFP with patients, yet many resident physicians, especially female residents, are interested in the topic. This study demonstrates that little osteopathic training is dedicated to NFP education. Osteopathic medical schools and family medicine residency programs should consider including NFP in their curriculum to not only meet the needs of their resident physicians but also to continue to fulfill the osteopathic approach to holistic medicine.

ACKNOWLEDGMENTS

Thank you to Jane Johnson, MA and Vanessa Pazdernik, MS of A.T. Still University for assistance with research design and performance of statistical analysis. Appreciation goes to Anita Franklin, BS of A.T. Still University for setting up the questionnaire through SurveyMonkey.

DISCLOSURE STATEMENT:

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