Pulling Back the Curtain: A Cross-Sectional Analysis of Medical Spas in Missouri

Amanda M. Ferrante, BS,* Ali M. Malik, MD,* M. Laurin Council, MD, MBA,* and Basia M. Michalski-McNeely, MD*

BACKGROUND There is very little legislation defining the degree of supervision and training required to perform cosmetic procedures in Missouri. The medical spa industry, particularly the volume and complexity of cosmetic procedures offered by medical spas, has seen significant growth in recent years.

OBJECTIVE To better understand the medical spa workforce, depth, and breadth of aesthetic procedures offered by medical spas in Missouri.

MATERIALS AND METHODS Cross-sectional study based on standardized telephone interviews, supplemented by website data. Survey responses were recorded, streamlined, and analyzed.

RESULTS Although 94.59% of medical spas in Missouri are affiliated with a physician, only 22.52% of medical spas have a physician on-site for administration of cosmetic treatments. Nonphysician staff members who administer cosmetic services generally outnumber physician affiliates at Missouri medical spas, with the average ratio of nonphysician staff who administer cosmetic services to MD/DO affiliates per spa being 2.1:1.

CONCLUSION There is significant variability in the level of training and supervision of medical spa staff performing cosmetic treatments in Missouri. As the medical spa industry continues to grow and high-risk cosmetic procedures become more commonplace, consistent statewide regulation of medical spas is needed to prevent harmful patient outcomes.

The medical spa industry is highly profitable and has experienced rapid growth. A recent report showed that the medical spa global market size has grown from $5.0 billion to $16.4 billion from 2020 to 2022.[1] The industry is projected to reach a market value of $49.4 billion by 2030. Consumer demand for "antiaging" cosmetic procedures, including botulinum toxin and dermal filler injections, has also increased.[1] Botulinum toxin has become the most common nonsurgical cosmetic procedure performed globally, followed by hyaluronic acid filler injections.[2]

In Missouri, medical spas are not well defined in formal statutes or regulations. Similarly, guidelines for cosmetic procedures are vague, with little to no legislation defining the amount of required physician supervision. In the state of Missouri, there are no laws governing who can administer cosmetic medical procedures, including injectables and laser services.[3] The scope of a cosmetic provider remains largely undefined to the extent that the administration of cosmetic medical procedures, defined as "beautifying or similar work upon the scalp, face, neck, ears, arms, hands, bust, torso, legs or feet," falls within the scope of practice of a non-medically trained aesthetician.[4] This is in stark contrast to neighboring states like Tennessee, where medical spas are formally and concretely defined in legal context and are therefore regulated accordingly.

The widespread shortage of regulation for Missouri-based medical spas can lead to wide-ranging variations in the level of medical training, experience, and oversight of those administering cosmetic procedures. This variability leads to disparities in the quality of care and may result in harmful patient outcomes.

Previous cross-sectional studies assessing medical spa composition have suggested considerable variability in the expertise of performers of cosmetic services and medical oversight at a citywide level.[5] This study surveyed medical spa composition in Missouri to determine the following: (1) range of services provided by medical spas, (2) operator and training background performing cosmetic services, and (3) extent of physician (MD/DO) supervision or involvement.

Methods

A list of over 200 open medical spas in Missouri was compiled using Google search in September 2023. Key search terms included "medical spas Missouri" and "aesthetic spas Missouri." Attempts to obtain a more comprehensive list of medical spas from the Missouri state government, including the Attorney General's office, were unsuccessful because of lack of registration requirements for medical spas in the state. Each spa was contacted by phone, and after an introduction, a scripted survey was

*From the *All authors are affiliated with the Division of Dermatology, Department of Internal Medicine, Washington University School of Medicine, St Louis, Missouri*

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Address correspondence and reprint requests to: Amanda M. Ferrante, BS, 969 N Mason Rd, Suite 200, St. Louis, MO 63141, or e-mail: a.addiego@wustl.edu

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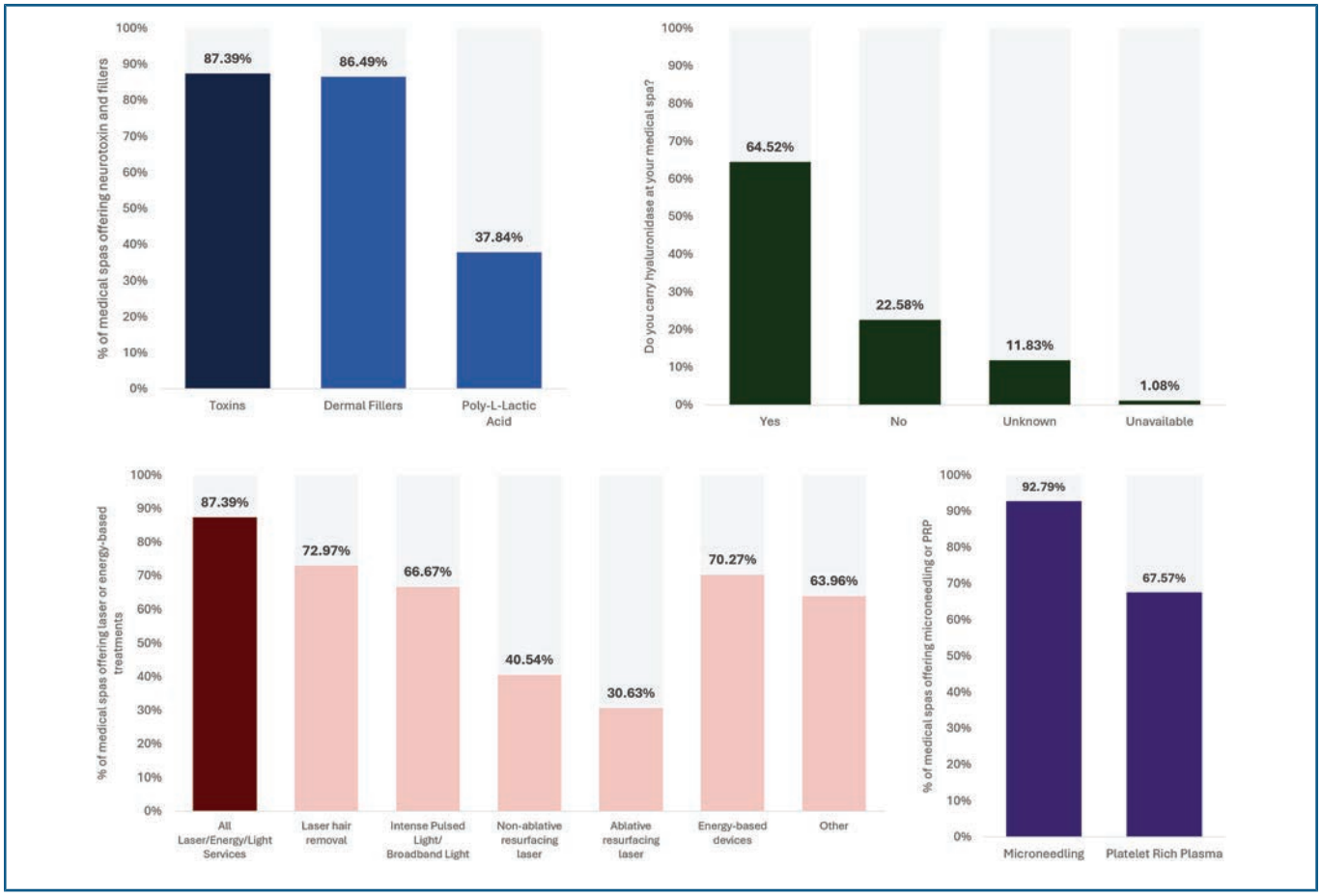

Figure 1. Medical spa services: (upper left) proportion of medical spas that offer botulinum toxins and dermal fillers; (upper right) proportion of medical spas that report offering dermal fillers who carry hyaluronidase; (lower left) proportion of medical spas offering laser-based or energy-based treatments; and (lower right) proportion of medical spas offering microneedling services or platelet-rich plasma.

reviewed with the responder (see **Supplemental Digital Content 1**, Figure 1, http://links.lww.com/DSS/B492). Responses for each prompt were documented. For responders who preferred email, emails with scripted questions were sent and responses were recorded accordingly.

Survey questions assessed the following: (1) services provided by individual spas, (2) brands of cosmetic products used by spas when and if applicable, (3) title/training of staff performing cosmetic services, (4) title/training of staff performing initial patient physical examinations or evaluations, (5) number of MD/DO physicians involved, (6) number of non-MD/DO staff administering cosmetic services, and (7) type of facility the medical spa operates in.

When a medical spa was unavailable, additional attempts to contact medical spa staff were made to maximize survey response yield. Because of intermittent variability of survey responses after data collection, medical spa-affiliated websites were analyzed to corroborate and supplement data obtained over the phone. Website data were included when websites offered additional information not obtained over the phone.

Moreover, additional medical services, including weight loss treatments, hormone therapy, IV therapy, or B12 injections, were noted and recorded from 229 medical spas.

Results

Of 238 total medical spas, 105 participated in the study and completed all parts of the phone survey. In total, 17 medical spas declined to answer 1 or more questions, and of these, 11 declined to answer any questions. One medical spa was excluded because of inconsistencies in data reporting. Phone interviews during which medical spa staff abruptly ended the phone interview were treated as rejections to participate. Phone interviews during which medical spa staff declined to answer some but not all questions were included in the analysis but specifically for interview prompts in which complete answers were received. Medical spas unable to be reached after multiple phone or email attempts were excluded.

Aesthetic Services Offered at Medical Spas

Overall, 87.39% (n = 97) of participating medical spas reported offering botulinum toxin injections. Of the total medical spas, 86.49% (n = 96) offered hyaluronic acid soft-

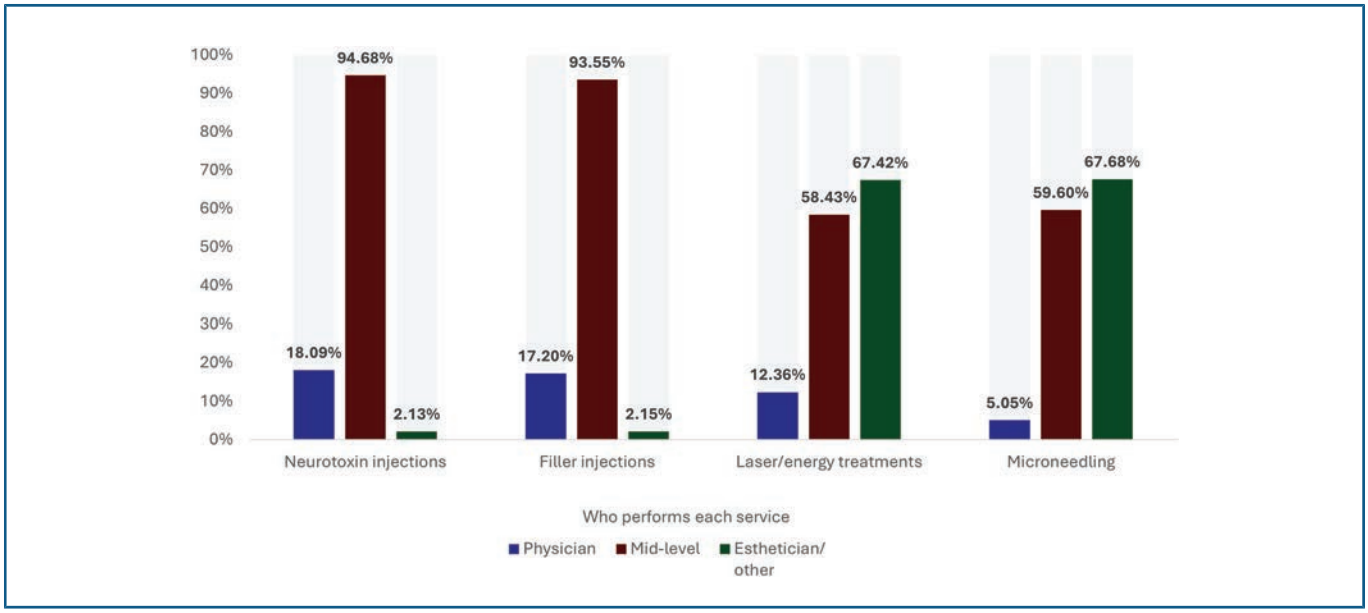

Figure 2. Service providers: proportion of medical spas with physician, midlevel, or aesthetician/other providers for each of the a services: neurotoxins, dermal fillers, laser/energy treatments, and microneedling.

tissue fillers; 37.84% (n = 42) offered poly-L-lactic acid (Figure 1, upper left; see **Supplemental Digital Content 1**, Table 1, http://links.lww.com/DSS/B492).

Of the medical spas that verbally reported offering fillers (n = 93), 64.52% (n = 60) carried hyaluronidase (Figure 1, upper right; see **Supplemental Digital Content 1**, Table 1, http://links.lww.com/DSS/B492). However, 22.58% (n = 21) did not carry hyaluronidase. Notably, a significant proportion (11.83%, n = 11) of medical spas that reported offering fillers were unaware if their medical spa carried hyaluronidase (Figure 1, upper right).

Overall, 87.39% (n = 97) of medical spas surveyed offered some form of laser, light, or energy-based services (Figure 1, lower left; see **Supplemental Digital Content 1**, Table 1, http://links.lww.com/DSS/B492); 72.97% (n = 81) of medical spas offered laser hair removal, which was the most popular laser service; 66.67% (n = 74) of medical spas performed intense pulsed light (IPL); 40.54% (n = 45) of medical spas offered nonablative resurfacing lasers, whereas 30.63% (n = 34) offered ablative resurfacing lasers; 70.27% (n = 78) of medical spas offered energy-based treatments, including radiofrequency, radiofrequency microneedling, and/or ultherapy; and 63.96% (n = 71) of spas offered some other form of laser, light, or energy-based treatment, including but not limited to laser tattoo removal, laser vein treatments, and "laser lipo" (Figure 1, lower left; see **Supplemental Digital Content 1**, Table 1, http://links.lww.com/DSS/B492).

Microneedling is a common service at medical spas, offered at 92.79% (n = 103) of locations surveyed (Figure 1, lower right; see **Supplemental Digital Content 1**, Table 1, http://links.lww.com/DSS/B492); 67.57% (n = 75) of medical spas offered platelet-rich plasma (PRP), including microneedling with PRP and PRP injections for hair loss.

Other Services Offered at Medical Spas

Two hundred and twenty-nine medical spas with active websites were reviewed for additional medical services, including weight loss treatments, hormone therapy, IV therapy, or B12 injections. Of these, 53.07% (n = 122) performed some form of medical weight loss treatment; 5.26% (n = 12) offer appetite suppressants including but not limited to phentermine, bupropion/naltrexone, and topiramate; 21.49% (n = 49) offer GLP-1 agonists such as semaglutide and tirzepatide; 24.12% (n = 56) offer lipotropic injections, which may include compounds such as B vitamins, methionine, inositol, or choline; 16.23% (n = 37) offer laser or energy-assisted weight loss including but not limited to "laser lipo," fat cavitation, and body contouring; 11.84% (n = 27) of these spas offer other forms of weight loss services such as "hCG rapid weight loss," ChiroThin, peptide therapy, cryotherapy, or other unspecified medical weight loss; 19.74% (n = 45) of the medical spas offer estrogen and/or testosterone hormone replacement therapy in the form of bioidentical hormone replacement therapy (BHRT), including hormone pellets; and 4.82% (n = 11) offer hormone supplements.

IV infusions and B12 injections are also common medical services offered at Missouri medical spas, performed at 32.46% (n = 75) and 39.47% (n = 91), respectively. The above additional medical services were elucidated by a website review of these medical spas and corresponding clinics; however, it was not determined which staff members are responsible for administering these services and the authors do not attempt to insinuate that nonmedically trained staff administer these services.

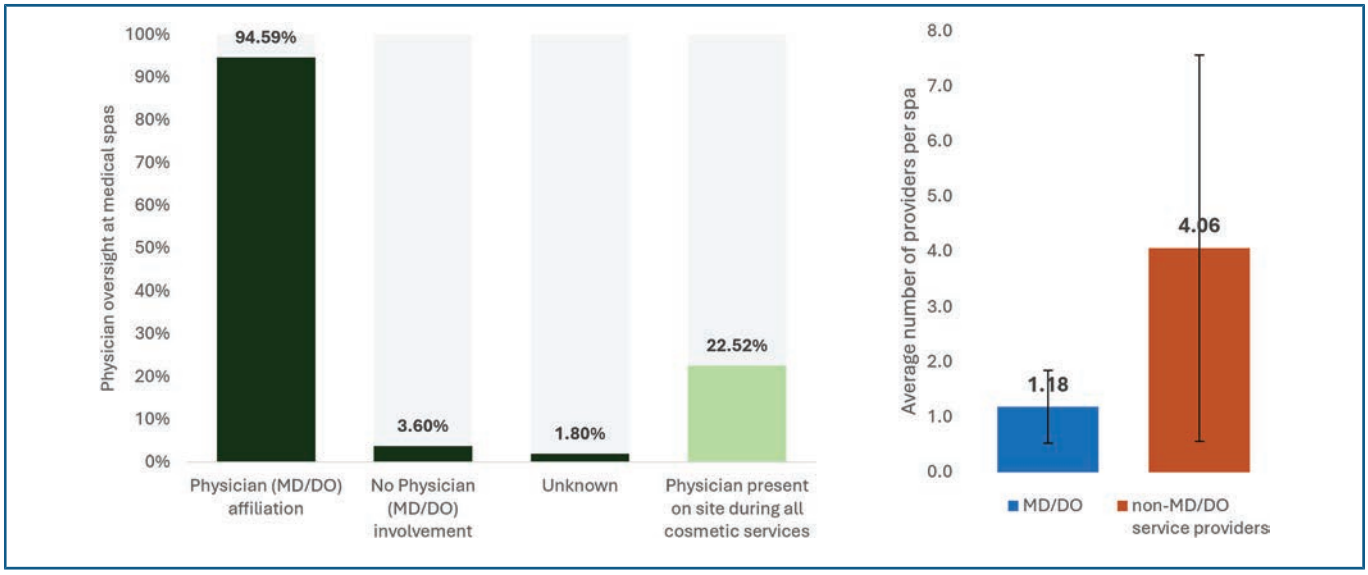

Figure 3. Medical oversight: (left) physician oversight at medical spas and (right) average number of physician (MD/DO) and nonphysician service providers per medical spa. Error bars represent standard deviation.

Medical Spa Staff Administering Cosmetic Services

Of medical spas that reported offering neurotoxin ($n = 94$), physicians inject at 18.09%, mid-level staff (i.e., nurses, nurse practitioners) inject at 94.68%, and aestheticians inject at 2.13% of spas (Figure 2). Of medical spas that reported offering fillers ($n = 93$), physicians inject at 17.20%, mid-level staff inject at 93.55%, and aestheticians inject at 2.15% of spas. Of medical spas that reported offering laser/energy treatments ($n = 90$), physicians operate these devices at 12.36% of spas, mid-level staff operate these devices at 58.43% of spas, and aestheticians at 67.42%. Of medical spas that reported offering microneedling ($n = 99$), physicians perform microneedling at 5.05% of spas, mid-level staff perform microneedling at 59.60% of spas, and aestheticians perform microneedling at 67.68%. One medical spa was omitted from the calculation because of unavailable information.

Medical Oversight

Overall, 94.59% of medical spas ($n = 105$) reported having MD or DO affiliation; 1.80% ($n = 2$) were unaware of MD/DO affiliation; and 3.60% ($n = 4$) reported no MD/DO involvement in their practice (Figure 3, left).

Although most spas reported physician affiliation, only 22.52% ($n = 25$) of spas overall had MD/DOs present during administration of all cosmetic services (Figure 3, left). Of medical spas reporting physician affiliation ($n = 105$), 23.81% ($n = 25$) report that a physician is present on-site during administration of all cosmetic services, 73.33% ($n = 77$) report that a physician is not on-site for all cosmetic services, and 2.86% ($n = 3$) of medical spas declined to disclose the presence or absence of a physician supervisor.

The average number of MD/DOs affiliated with each medical spa is 1.18, with a SD of 0.66 (Figure 3, right). The average number of non-MD/DO staff administering relevant cosmetic services at each location is 4.06 with a SD of 3.50. The average ratio of physician (MD/DO) to nonphysician staff who perform cosmetic services is 1:2.1, which was calculated by obtaining the average across all medical spas of the ratio of physicians to nonphysician staff who perform cosmetic services within each medical spa. For all aforementioned calculations, only medical spas reporting both number of physicians and nonphysician staff were recorded ($n = 105$). Other medical spas were omitted because of refusal to answer 1 or both questions regarding MD/DO physician involvement and/or lack of available information regarding number of affiliated physicians or nonphysician staff who perform cosmetic services.

Facility

The authors classified the open-ended responses for facility type into 1 of 5 categories: stand-alone building, strip mall/plaza/retail, commercial office space, clinic or medical facility, and other; 12.15% ($n = 13$) of medical spas operate in a stand-alone/independent building; 29.91% ($n = 32$) operate in a retail space; 20.56% ($n = 22$) in a commercial office space; 30.48% ($n = 33$) in a medical facility; and 6.54% ($n = 7$) in another location. These other locations include salons, wellness centers, and mobile med spas.

Discussion

Most medical spas in Missouri perform botulinum toxin injections, soft-tissue fillers, laser/energy-based devices, and/or microneedling. Physicians compose the minority of those performing all services. Mid-level staff, including nurses and nurse practitioners, are the most common injectors, whereas aestheticians, laser technicians, and medical assistants are the most common performers of laser services and microneedling. The average ratio of physician (MD/DO) to nonphysician staff who administer

cosmetic services within each medical spa is 1:2.1. Physicians are on-site for cosmetic procedures at only 22.52% of medical spas overall.

This cross-sectional study adds to the growing body of evidence that demonstrates that most cosmetic procedures performed at medical spas are not performed and/or supervised by MD/DO physicians. Moreover, this study reveals an extensive and statewide lack of regulatory oversight practices pervasive in the medical spa industry. Practices at medical spas in Missouri differ greatly regarding the extent and scope of individual spa cosmetic services, workforce, and physician oversight.

Study results specifically highlight distinct trends in treatment and care gaps prevalent within medical spas in Missouri, such as the relative scarcity and/or lack of knowledge of hyaluronidase at medical spas in which hyaluronic acid-based injectable filler treatments are regularly offered.

Results also reveal a significant and widespread lack of physician oversight at Missouri-based medical spas at which potentially complicated and high-risk procedures, such as laser and injectable procedures, are regularly performed. Because cosmetic procedures, particularly laser procedures, performed by nonphysician operators result in increased risk of procedural complications and litigation, this pervasive lack of oversight may lead to harmful patient outcomes.[6] Laser hair removal, which is the most commonly performed laser procedure at Missouri medical spas according to this study, is also the most commonly litigated procedure.[7,8] Importantly, although nonphysician staff perform the vast majority of laser procedures at Missouri medical spas according to this study, they also make up over 70% of the operators in cases of liability claims.[8]

Results also highlight discrepancies between self-reported medical spa workforce information and physician oversight. For example, although the vast majority (>90%) of Missouri-based medical spas surveyed confirmed physician involvement or supervision, less than a quarter (22.52%) of surveyed spas endorsed that physician supervisors were on-site during administration of procedural services, including laser procedures. Notably, the American Med Spa Association highlights the need for appropriate physician supervision for med spa procedures because of risk of medical complications, and the American Society for Dermatologic Surgery Association (ASDSA) opposes in-name-only medical directors without adequate on-site supervision.[9,10]

Limitations of this study include the use of data obtained from medical spas within a single state, Missouri. Additional studies should be completed to evaluate medical spa composition at a regional or national level to determine if observed statewide trends in medical spa workforce composition and extent and scope of medical spa services and physician oversight are consistent with overarching national trends. Furthermore, this study should be expanded to assess rates of complications in medical spa procedures in Missouri versus more heavily regulated states to determine the underlying effect of these policies on patient health outcomes.

Importantly, study data are also limited by the knowledge of the medical spa representatives surveyed. Because a phone survey was conducted, respondents ranged from front desk receptionists to staff members who administer cosmetic services. As a result, there was varying level of knowledge regarding details of individual services provided and/or extent of medical oversight. This was exemplified by the significant proportion of medical spa staff members reportedly performing filler injections who also reported that they were unsure whether the medical spa carried hyaluronidase (11.83%); 1.80% of medical spas were also unsure if their respective medical spa was affiliated with an MD/DO physician or maintained physician oversight or supervision. Therefore, the authors encourage training of all medical spa staff who interface with patients regularly to support transparency and accessibility of information regarding medical spa services, medical personnel, and affiliated MD/DO physician involvement.

Conclusion

There are considerable and widespread discrepancies in the extent of MD/DO physician supervision and level of training among those performing cosmetic procedures at medical spas in Missouri, which is consistent with overarching statewide legislative trends (3). Improved statewide regulation of cosmetic procedures performed at medical spas and guidelines regarding physician supervision and staffing ratios of supervising physicians to nonphysician staff would promote patient safety in Missouri and beyond.

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