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Clinical Studies

Spine surgeon conflict of interest disclosure discrepancies between a national conference and the open payments database



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ABSTRACT

Background: Financial relationships between physicians and the medical device industry are common. These relationships can potentially influence research, education, and patient care. The purpose of this study was to evaluate inconsistencies between physician disclosures and the Open Payments database for a national spine conference.

Methods: Disclosures of participants in the 2023 North American Spine Society (NASS) conferences were compared with the Open Payments database. Discrepancies were noted whenever a participant had a company listing on their Open Payments page that was not reported in their disclosure in the NASS Disclosure Index. Simple statistics were reported as a frequency and percentage for categorical variables, and median and interquartile range (IQR) were used for continuous variables. Pearson correlations were run to investigate associations between the number of reportable companies, the number of discrepancies, and general payment amounts.

Results: A total of 432 participants met the inclusion criteria, with the majority having discrepancies between their self-reported disclosures and the Open Payments database (84.2%, N=364/432). Regarding surgeons with a discrepancy, 80.2% (N=292/364) failed to report payments of less than 1,000 USD. Physicians affiliated with a larger number of reportable companies were associated with an increased number of discrepancies ($p < .001$, $R = 0.832$) and a greater general payment amount ($p = .012$, $R = 0.126$).

Conclusions: Discrepancy rates between what surgeons disclosed at NASS 2023 and what companies reported to Open Payments were high. However, the majority of these discrepancies that the physicians failed to report were low in value, falling below 1,000 USD. As a potential means to mitigate these discrepancies, it is imperative that physicians review their Open Payments page prior to disclosure submission.

Introduction

The Physician Payments Sunshine Act, passed in 2010, aims to enhance transparency in the relationships between physicians and the medical industry [1]. This legislation mandates that any transfer of value exceeding 10 USD from industry to healthcare professionals be reported to the Centers for Medicare and Medicaid Services (CMS) for public disclosure [2,3]. Since 2014, these payments have been published by CMS on Open Payments, a searchable database that provides insight into the financial relationships between healthcare providers and medical device companies [4,5]. In 2022, records from Open Payments revealed that over 12 billion USD was exchanged between the

medical industry and healthcare professionals or teaching hospitals [6].

Financial relationships between spine surgeons and the medical device industry are well-documented in the literature [7–17]. These relationships are vital for the innovation of spinal technologies and progress within the medical field. However, in recent years, there have been rising concerns that these relationships might impact research integrity, educational content, clinical decisions, and patient care [18–20]. As a result, it has become standard practice for medical journals and academic society meetings to mandate disclosure of industry ties from authors and participants to limit or acknowledge underlying biases that may exist in the literature [21,22].

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While the significance of financial disclosure is recognized, disclosure policies can vary between conferences, leading to potential inconsistencies. As a result, prior studies have identified variability in the reporting of financial conflicts of interest by surgeons presenting at different spine conferences within the same year [14]. The literature has shown surgeons often fail to disclose certain financial information they were required to include when reviewing guidelines from journals or society meetings, potentially secondary to unclear guidelines or misinterpretation of instructions [12,17].

The purpose of this study is to evaluate the accuracy of physicians' self-reported, conflict-of-interest disclosures with the posted payments found on the Open Payments database. Specifically, we chose to examine differences in surgeons' Open Payment pages compared to their disclosures in the 2023 North American Spine Society (NASS) Disclosure Index. There is limited literature exploring the financial relationships of spine conference participants, especially the underlying discrepancies that may exist [23,24]. We hypothesize that over 50% of surgeons have a financial discrepancy, especially in regards to smaller payments, as large variability exists between medical societies when it comes to the extent of information that must be disclosed.

Methods

2023 NASS disclosure index

Following Institutional Review Board exemption, a retrospective review was conducted by collecting data from the 2023 NASS Disclosure index [25]. The NASS 38th Annual Meeting was held in 2023 from October 18-21st in Los Angeles, California [26]. The disclosure policy of the meeting requires participants to disclose the estimated dollar amounts of all Commercial Support relationships, regardless of relation to their work [25]. Payments greater than 100 USD that occurred within the past twelve months, regardless of relevance to the author's work, were required to be disclosed.

The 2023 NASS Disclosure Index was current as of October 10th, 2022 [25]. The Disclosure Index includes the name of the participant, the type of relationship (royalties, consulting, etc.), the company with whom the participant had a relationship, and the monetary range of the payment based on 9 preset options ranging from 100 USD to 1,000 USD and upwards of over 2.5 million USD per year.

Of the 1,437 participants required to make disclosures for the 2023 NASS Annual Meeting, 432 met the inclusion criteria. Physicians were included in this study if they met the following criteria: (1) they completed training in orthopedic or neurosurgical surgery, (2) practiced in the United States, and (3) completed their training prior to or during the year 2022. 1,005 individuals were excluded due to: (1) training in fields other than orthopedic or neurosurgical surgery (N=79), (2) profession other than physician (N=82), (3) training completed after 2022 (N=353), (4) professional outside of the United States (N=175), (5) research staff (N=83), and (6) no available payment information (N=233).

Open payments database

The Open Payments database was used to collect information on payments made to NASS participants. As NASS required disclosures within the past 12 months and the disclosures were current as of October 2022, per the Disclosure Index, the data was collected and restricted to this timeframe. Each company and the amount given to the surgeon were recorded, and a discrepancy was defined as when a company was listed on a surgeon's Open Payments page but not reported in the Disclosure Index.

Demographic information

Demographic information was obtained for each surgeon who met the inclusion criteria by utilizing public physician records. These records

Table 1

Percentage of conference participants with discrepancies who missed a disclosure within a monetary value range (N=364).

Missed payment values among NASS participants	
	% (N)
<1,000 USD	80.2(292)
1,000 ≤ USD < 50,000	11.8 (43)
50,000 ≤ USD < 100,000	4.7 (17)
100,000 ≤ USD	5.2 (19)

included faculty, medical school, and physician group websites. State of practice and field of residency training were adapted from each of the physician's profiles to confirm the correct Open Payments profile.

Data analysis

Simple statistics were reported as a frequency and percentage for categorical variables, and median and interquartile range (IQR) were used for continuous variables. Pearson correlations were run to investigate associations between the number of reportable companies, the number of discrepancies, and general payment amounts. Statistical analyses were performed using SPSS Statistical Analysis Software, Version 29 (IBM, Armonk, NY, USA). Statistical significance was defined as $p \leq .05$.

Results

NASS data

A total of 432 participants were included in this study. Of the 432 participants, 69.0% (N=298/432) were orthopedic surgeons, while 31.0% (N=134/432) were neurosurgeons. Of the participants, 39.4% (N=170/432) presented, moderated, reviewed abstracts, or were on the board of directors for the annual meeting. Disclosure information was analyzed for the 432 participants of the NASS 2023 Annual Meeting. Of these participants, 72.7% (N=314/432) reported relationships with industry, while 27.3% (N=118/432) had no disclosures.

Open payments data

The median total payments among the 432 participants was 19,120.10 (IQR: 92,714.27) USD. The median general payment (N=398) was 13,292.77 (IQR: 72,282.51) USD. The median associated research funding (N=98) was 28,148.75 (IQR: 50,630.55) USD. The median research payment (N=15) was 21,500.00 (IQR: 39,458.78) USD. The median ownership/investment interest (N=37) was 76,738.36 (IQR: 141,962.00) USD.

Discrepancy data

Discrepancies between their self-reported disclosures and the Open Payments database were observed in 84.2% (N=364/432) of participants. Table 1 presents the percentage of conference participants with discrepancies who failed to disclose payments within specific monetary ranges. A detailed comparison of the number of discrepancies per participant against their Open Payments profile is provided in Fig. 1 and Table 2. Additionally, Fig. 2 and Table 3. outline the number of companies associated with each NASS participant. Physicians linked to a higher number of companies exhibit a greater number of discrepancies ($p < .001$, $R = 0.832$) and a higher total general payment amount ($p = .012$, $R = 0.126$).

Discussion

Our study sought to evaluate the financial relationships of spine conference participants at the 2023 NASS Annual Meeting, particularly the

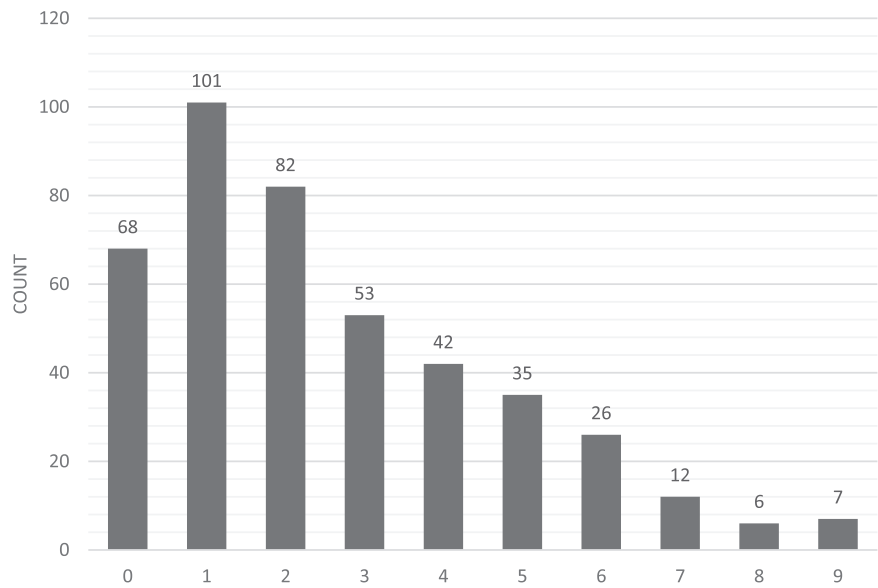


Fig. 1. Bar chart of discrepancy counts between conference participants' self-reported disclosures and the open payments database (N=432).

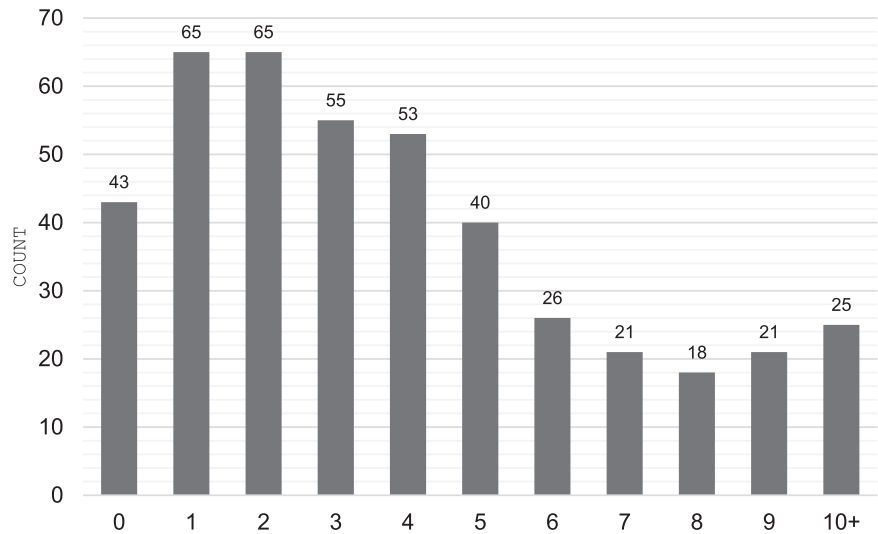


Fig. 2. Bar chart of the number of companies per physician that have made payments according to their open payments profile (N=432).

Table 2
Percentage distribution of conference participants based on their total number of discrepancies between their self-reported disclosures and the open payments database (N=432).

Discrepancy count among NASS participants	
	% (N)
0	15.7 (68)
1	23.4 (101)
2	19.0 (82)
3	12.3 (53)
4	9.7 (42)
5	8.1 (35)
6	6.0 (26)
7	2.8 (12)
8	1.4 (6)
9	1.6 (7)

underlying discrepancies that may exist between meeting disclosures of physicians in attendance and their associated Open Payments profile. Of the 432 participants who met the inclusion criteria for our study, 84.2% had discrepancies between their self-reported disclosures and the Open Payments database. With 80.2% of participants failing to dis-

Table 3
Percentage of conference participants based on the number of companies that have made payments to them according to their open payments profile (N=432).

Number of companies associated with NASS participants	
	% (N)
0	10 (43)
1	15 (65)
2	15 (65)
3	12.7 (55)
4	12.3 (53)
5	9.3 (40)
6	6.0 (26)
7	4.9 (21)
8	4.2 (18)
9	4.9 (21)
10+	5.8 (25)

close payments of less than 1,000 USD, the majority of these discrepancies were of lower monetary value. Additionally, those affiliated with a larger number of reportable companies were associated with a greater number of failed reported payments and a greater overall payment amount.

While this is the first study to specifically evaluate financial discrepancies of spine surgeons in relation to their Open Payments profile and conference disclosures, investigating financial relationships of authors in relation to journal publications, device manufacturer websites, and across varying physician specialties has increasingly become a topic of interest [17,23,24,27–31]. One such study by Lucasti et al. precluding our investigation of the NASS Annual Meeting looked at physician demographics and payment characteristics in 2021 [24]. As described elsewhere in the literature, the top 10% of orthopedic and neurosurgeons in attendance received 58.7% and 70.1% of overall payments, respectively, while years of practice were associated with a higher general payment amount, specifically those with 21 to 30 years of practice ($p=.004$) [24,31–35]. The latter finding was reflected at the American Academy of Orthopedic Surgeons (AAOS) meeting in 2019 where senior authors, a role often taken on by physicians in practice for a longer time relative to their co-authors, were most likely to fail to include a financial disclosure [28].

When analyzing factors associated with appropriate disclosure of a conflict, direct payments between 10,000–100,000 USD or in excess of 100,000 USD; as seen with our study, payments of this magnitude were among the lowest that failed to be reported [17]. Interestingly, Okike et al. found that the failure to disclose was most often due to the payment being unrelated to the topic presentation, while misunderstanding reporting requirements and inaccurate reporting by the program despite being disclosed were among other reasons [17].

Though the majority of payment discrepancies found in our study were of lower monetary value, it is imperative to understand the potential implications as the relationship between physicians and industry can have both intentional and unintentional ramifications regarding its influence on research, education, and patient care [23,24,27,30]. Many physicians work hand in hand with companies to improve implants and surgical devices, as roughly one-half of all orthopedic surgeons have industry financial relationships, and those with a greater number of disclosures have been associated with giving a larger number of presentations at conferences [24,28,36,37]. We report that physicians affiliated with a greater number of industry entities were less likely to report payments and receive an overall greater amount in reportable funding. Indirectly, this provides a means for industry relationships to play a role in the clinical findings and techniques presented at such meetings that can shape the practices of the physicians in attendance.

Such relationships are not just limited to meetings, as similar concerns have been described in leading orthopedic journals. Boddapati et al. compared financial disclosures of authors who published in the American Journal of Sports Medicine with the Open Payments database and found 25.3% of authors had a discrepancy when looking at all facets of industry relationship, including royalties, consulting, research payments, ownership, and investments [27]. Notably, spine surgeons have been found to have higher rates of inconsistencies of disclosures compared to Open Payments [23,24,28]. While the reasons for these higher rates are not fully understood, research indicates that spine surgeons tend to receive larger industry payments, and variations in disclosure policies across societies may contribute to these discrepancies [33,38,39]. With continued focus on understanding the role financial relationships play in the literature and at academic meetings, physicians are provided an additional means of bias when interpreting information and how it may shape their practice.

As with all studies, there are inherent limitations to our study and those in the literature of similar design. First, each database utilized to obtain disclosure data is dependent on information being accurately submitted and verified in a reliable manner. As described by Hannon et al., upwards of 11% of AAOS disclosures were not included in the Open Payment database while an additional 23% had disclosures that were not reported or inappropriately categorized [29]. Despite this, the Open Payment database has served as a benchmark for studies exploring financial discrepancies in the orthopedic literature [27–29,31,36]. Second, there is limited external validity as our study cohort was com-

posed of practicing spine surgeons in attendance at the NASS 2023 Annual Meeting, which may not accurately reflect all practicing orthopedic and neurosurgical spine surgeons alike. Lastly, as the NASS annual disclosures are reported as a monetary range and exact monetary values could not be compared, disclosures on the Open Payment database were carefully aligned to the respective thresholds reported in the NASS Annual Disclosure Index [23].

Conclusion

Discrepancy rates between what surgeons disclosed at NASS 2023 and what companies reported to Open Payments were high. Interestingly, many of these discrepancies resulted from the payments falling below 1,000 USD. As a potential means to mitigate these discrepancies, it is imperative that physicians should consider reviewing their Open Payments page prior to disclosure submission. As future studies continue to explore the relationships between physicians and the medical industry, further investigations and systematic reviews may be warranted to fully assess both their appropriateness and provide a more comprehensive evaluation across all medical specialties.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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