Examination of inattentive gender bias in medicine: Patients’ form of addressing male and female physicians

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Abstract: Gender bias has been found to influence both the patient and the physician populations. To date, studies in the field of gender bias which focused on patients have primarily investigated the quality of treatment and the nature of patient-physician interactions in relation to the doctor's gender. The current study intends to broaden the perspective of gender bias research by evaluating how the patient’s approach towards their physician is affected by the doctor’s gender. In this

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observational study mixed methods were used to evaluate behavioral forms of approach towards the treating physician displayed during 200 medical appointments in an outpatient surgical/medical retina clinic at the Rambam Health Care Campus, a tertiary referral center in Haifa, Israel between 2018–2019. Most patients tended to address their physician formally using “doctor” or the doctors’ full name rather than using first name or nicknames (83/106). No correlation was found between the form of address and physician’s gender. Male patients tended to address the male physician formally more often than female patients did (p = 0.051). In the setting studied here, patients tended to address the physicians treating them formally regardless of the physician’s gender. However, differences in body language and gestures when approaching the male physician were observed, which may reflect how physician gender shapes the physician-patient relationship. Increased awareness to diverse aspects and manifestations of gender bias in clinics may promote gender equality in medical work environments.

Subjects: Social Sciences; Economics; Finance; Business & Industry; Business; Management and Accounting; Industry & Industrial Studies

Keywords: Gender bias; Medicine; physicians; women

1. Introduction
Gender bias, manifested by discrimination between individuals on the basis of gender alone, is entwined in many aspects of life. This bias is frequently built on stereotypes, sociocultural factors, and self-conceiving that one gender tends to specific characterizations or features in comparison to another gender (Hamberg, 2008). In recent years, the gender bias issue has received increasing attention in the medical field (Verdonk et al., 2009), with research focused mainly on the nature and quality of treatment depending on the patient’s gender. Research concentrated on doctors compared professional opportunities, patient satisfaction, and professional assessment in relation to the doctors’ gender (Risberg et al., 2009). These studies indicate that equality remains a serious concern, particularly relating to the underrepresentation of women in leadership positions in the medical field (Lyons et al., 2021; Tricco et al., 2021). Additional research efforts understanding gender bias in medicine have provided novel perspectives on the interactions between physicians and patients focusing on the attitude toward female versus male physicians.

The way people address someone typically reflects the nature of their relationship with them (Murphy, 1988). Using a title rather than a person’s first name conveyed that the addressee held a higher status. Specific forms of address may also represent the level of respect held for the addressee(Slobin et al., 1968). Thus, addressing females less formally than males may represent gender prejudice and is a topic of research in a variety of fields, including politics (Uscinski & Goren, 2011).

In clinical practice, several aspects of gender bias might manifest in physician-patient encounters (Bertakis, 2009). Although disparities between addressing male or female physicians can be subtle, they may represent expressions of gender bias. Addressing a physician in a formal manner can impact the physician’s professional and authoritative perceptions (Hemphill et al., 2020). On the other hand, eliminating formal pronouns can reflect the degree to which the doctor’s expertise is recognized. Even the simplest ways of addressing a physician can contribute to the continuance and dissemination of gender bias in medicine (Kaatz et al., 2015).

The form of address toward females and males in similar positions has been previously used as an indicator of gender disparities in studies focusing on student-professors’ relationship and in speaker introduction. Research by Harzing et al. that compared university student address to male
and female professors in 22 countries showed that students addressed the female lecturer using her first name more frequently than they did for the male lecturers, who were of similar age and academic background (Harzing et al., 2010). In a study conducted at the Mayo Clinic Arizona, Files et al examined the existence and extent of gender bias in the manner by which speakers were introduced in hospital academic conferences. In over 320 lecturer cases, women presenters introduced the speaker as a doctor in 96 percent of the cases, whereas men introduced the lecturer as a doctor in only 65 percent of cases. They did so more frequently when the speaker was a male, reaching 72 percent of such situations, but presented female speakers as doctors in fewer than half of the cases (Files et al., 2017). Thus, gender bias seems to be common and publicly manifested by all genders in academic and medical settings alike.

The goal of this study is to deepen the understanding of gender bias in medicine, with attention to how it affects patients’ approach to physicians based on their gender. Informal and sometimes diminishing behaviors while addressing doctors may increase emotions of marginalization among female physicians. Patients may address a doctor informally by using their first name rather than their title, but more subtle cues like body language may also occur. Thus, assessing the form of address quantitatively by documentation of the verbal expressions towards the doctor and qualitatively by documentation of body language and gestures can delineate displays of gender bias in medical clinics. This study broadens the scope of research in this field by focusing on patient-physician real-world interactions.

2. Materials and methods

2.1. Theory
Gender bias in medicine can result when assumptions are made about differences which in fact do not exist (e.g., due to stereotypes) or when assumptions of equity/sameness between women and men are made while real differences exist (e.g., biologic or social differences). This conceptual paradigm is useful when discussing strategies to avoid gender prejudice in clinical practice, medical education, and career possibilities in the medical field. Some forms of gender bias in medicine are the result of ignorance regarding gender stereotypes and cannot be changed by facts alone. However, awareness-raising initiatives and ongoing discussions on gender attitudes among doctors, students, researchers, and decision-makers may lessen bias brought on by gendered stereotypes or by ignorance of discrimination linked to gender disparity (Risberg et al., 2009).

2.2. Study design and patients
In this study, the form of address to male and female doctors during clinical encounters was assessed to identify gender bias as reflected by verbal and nonverbal language. This observational cross-sectional study was conducted in the setting of an a surgical/medical retina clinic at the Rambam Health Care Campus, a tertiary referral center affiliated with a university hospital. Data was collected for each participant during a single clinic visit. The information was gathered from 200 patients over the course of 24 clinic days between March 2018 and August 2019, 100 of whom met with a male surgeon and 100 with a female surgeon. The clinic was staffed by two retina specialists, one male and one female, both of whom had equivalent training and experience, and who were of similar age. Both specialists presented a similar surgical attire which included a hospital long-sleeved white coat over medical uniform (“scrubs”). All patients arrived for a scheduled consultation with one of the surgeons, and the investigator, a medical trainee who was presented as such, was present during the visit after receiving consent from the patient. Mixed methods were used to assess the form of address to the physicians. To quantitatively assess the form of address, in the beginning of each encounter the physicians introduced themselves formally, stating their title as a doctor and their surname (“Hello, I’m Dr. XX”). During each visit, the investigator documented the patient’s gender, age, first language, whether that was the patient’s first appointment with the physician and the method of addressing the doctor. If the patient used the phrase “doctor” either by itself or accompanied by the doctor’s surname or full name exclusively during the meeting, the address was classified as formal. If the patient used the doctor’s
name without adding the title “doctor” or used a nickname such as “honey” or “sweetie” at least once throughout the meeting, the address was classified as informal. Similar methodology has been previously used in studies which regarded formal/informal terms of address as markers of gendered attitudes, both in the medical field (Files et al., 2017) and in other fields such as politics (Usbinski & Goren, 2011). Although not previously applied to patient-physician interactions, it is reasonable to assume that similar validity and reliability apply. To qualitatively assess the form of address the investigator documented any body language that can reflect formality such as hand shaking. Patients under the age of 18 years were excluded from the study, as were those who refused to allow the investigator into the exam room. Clinic visits during which the patient did not directly address the physician even once throughout the meeting (rather just replied or used general phrases) were not included in the analysis. The study was carried out in accordance with the Helsinki Declaration and was approved by the Institutional Ethics Committee.

2.3. Statistical analysis
Patient demographics and methods of addressing female and male physicians were compared. A t-test was used to compare continuous variables since samples were independent and sample sizes were large enough. A chi-squared test was used to test for association in categorical data. A stepwise backward logistic regression was used to determine patient demographics that significantly predict informal address. Statistical significance was defined as a two-sided p-value of less than 0.05. The statistical analysis was conducted using Minitab 17.

3. Results
Observations collected during 200 retina appointments at the Ophthalmology clinic were documented, 100 with a male physician and 100 with a female physician. 94 patients were excluded from the analysis because they did not directly address or refer to the doctor throughout the meeting. The remaining cohort consisted of 106 patients, 59 females and 47 males, of whom 51 met with the female physician and 43 met with the male physician. The average patient age was 60 years (18–92). For 55 patients, Hebrew was the first language, while the remaining 51 patients spoke Russian, Arabic, or Amharic as their first language. Only 14 of the visits were first encounters with the specialist, while 92 were follow-up visits after previous consultations with the same physician. There were no statistically significant differences in demographics between patients who met with a male or female physician except for the average patient age, which was higher by approximately a decade for the male physician’s patients, as shown in Table 1.

Overall, in 78% of the encounters (83/106) patients addressed the specialists formally, while in 22% of the encounters (23/106) they adopted an informal approach, such as using the doctor’s first name or an unpermitted nickname such as “honey” or “sweetie”. Out of the 83 “formal” encounters, 40 were held with the female physician and 43 with the male physician, amounting to 81% of formal approaches from total approaches to the female physician (40/49) and 75% of formal approaches to the male physician (43/57). No correlation was found between the specialist’s gender and the manner of addressing them ($\chi^2 = 0.595$, df = 1, $p = 0.44$). Female patients addressed the physician formally in 72% of the cases (43/59), while male patients addressed their consulting specialist formally in 85% of the cases (40/47). There was no correlation between the patient’s gender and the manner of addressing the physician, as shown in Table 2 ($\chi^2 = 2.3$, df = 1, $p = 0.129$).

When addressing a male specialist, male patients tended to utilize formal titles (22/25) more frequently than female patients (21/32) ($\chi^2 = 3.792$, df = 1, $p = 0.051$). However, no such difference was detected when addressing a female specialist ($\chi^2 = 0.001$, df = 1, $p = 0.976$), as illustrated in Figure 1.

Patient age, first language, the physicians’ clothing and whether it was their first meeting with the specialist were all included as predictive factors in the logistic regression. None of the variables were found to predict the likelihood of addressing the physician in a formal or informal manner.
Table 1. Demographics

|                          | Female physician (n) | Male physician (n) | Total (n) | P value* |
|--------------------------|----------------------|--------------------|-----------|----------|
| Female Patients          | 27                   | 32                 | 59        | 0.929    |
| Male Patients            | 22                   | 25                 | 47        |          |
| Patient’s age            | 56.7                 | 64.5               | 60.93     | 0.0007   |
| First Visit              | 6                    | 8                  | 14        | 0.984    |
| Follow up                | 43                   | 48                 | 92        |          |
| Hebrew as native language| 25                   | 30                 | 55        | 0.976    |
| Other language as native language | 24      | 27                 | 51        |          |

* For categorical variables Chi-square test was used, for continuous variables a T test was used.

In addition to the verbal manner of addressing the physician, a qualitative assessment of body language was conducted. Seven patients used formal gestures such as handshakes. Six of these cases occurred towards the male physician (6/43) and one towards the female physician (1/51). Thus, patients used formal gestures towards the male physician more often as compared to the female physician ($X^2 = 4.86, df = 1, p = 0.027$).

4. Discussion

The motivation for this study stemmed from a global rise in awareness towards gender bias in the medical field. Its purpose was to evaluate sex differences in physician-patient interactions in the clinical field setting. The quantitative analysis discovered that most patients address their physicians in a formal manner, with no discernible differences between male and female physicians. Male patients, on the other hand, address their male physician formally more often than female patients. The qualitative analysis revealed that patients tended to make formal gestures toward the male physician more often. There was no correlation between the patient demographic parameters and the formality with which they addressed the physician.

Significant differences between male and female physicians exist in a variety of professional aspects, including academic rank promotion rate, salary, contentment, and wear out (Howell et al., 2015; Jena et al., 2015, 2016; Richardsen & Burke, 1991; Richter et al., 2020; Whaley et al., 2020). In recent decades, the proportion of women studying medicine has steadily increased, as has the number of women working in academic medicine (Bloor et al., 2008; Nonnemaker, 2000). Nonetheless, the percentage of women promoted to high-level academic positions in medical schools is lower than their proportional share (Bickel et al., 2002; Ludmerer, 2020). Furthermore, women’s academic advancement is slower than that of their male counterparts (Sebo et al., 2021). An additional reflection of gender bias in medicine may be found in academic publications as a first author in high-impact

Table 2. Patients approach to physicians

| Patient and physician gender (patient, physician) | physician was addressed formally |
|--------------------------------------------------|---------------------------------|
|                                                  | n/N | %          |
| Female, Female (FP-FD)                           | 22/27 | 81.5%     |
| Female, Male (FP-MD)                            | 21/32 | 65.6%     |
| Male, Female (MP-FD)                            | 18/22 | 81.8%     |
| Male, Male (MP-MD)                               | 22/25 | 88.0%     |

FP: female patient, FD: female doctor, MP: male patient, MD: male doctor. $X^2 = 2.3, df = 1, p = 0.129$. An address was classified as formal if the patient used the title (doctor) with or without the doctors’ name and as informal if the doctor’s name without title or nicknames were used.
medical journals; according to Jaggi et al., there has been an upward trend in the proportion of women authorship on medical papers in the last 35 years (Jaggi et al., 2006). Despite this continued growth, the percentage of women who publish in scientific peer-reviewed literature is still much lower than that of men (Filardo et al., 2016). Similarly, in the field of ophthalmology, a study undertaken by Mimouni et al. found that although the proportion of female authors in ophthalmic articles has increased, their overall rate remains below 50 percent. Further analysis revealed that as little as 34.7% of authors in multi-author papers were women, with even fewer listed in senior authorship positions (Mimouni et al., 2016).

Gender prejudice was also observed in a study by Trix et al., who examined over 300 recommendation letters for academic posts. They noted that letters for women were shorter and used formal names 4 times less frequently than letters for men (TRIX & PSENKA, 2003). Similarly, implicit bias and gender based differences were demonstrated in letters of recommendation for fellowship positions in transplant surgery and ophthalmology (Hoffman et al., 2019; Lin et al., 2019).

Gender bias drives gender disparity and thus it is important to identify and characterize different aspects of the phenomenon from different points of view (Thibault, 2016). Gender bias can be propagated using language that subordinates one gender to another, such as when the formality of an address varies from using a title and last name to the use of nicknames. Furthermore, gender bias can be unconscious and subtle, manifested by word choice or gestures that may reflect assumptions about gender roles (Duma et al., 2019). Since gender disparity in medicine remains a significant challenge for women in the workplace, there is need for further research to delineate and reveal gender bias manifestations in medical clinics.

There are many explicit and implicit expressions of gender bias (Hui et al., 2020; Régner et al., 2019; Salles et al., 2019). While here the formality of addressing physicians was evaluated, additional manifestations of gender bias in physician-patient interactions can be suggested. These may be more elusive and subtle, such as interruptions by the patients during sentences, stated and unstated reservations about the recommended treatment, direct questions about the specialist’s experience and training, and so on. For example, in this cohort when a male ophthalmology resident served as a translator to help a patient communicate with the female physician, the patient tended to thank

Figure 1. The distribution of formal address of male and female patients to male and female physicians. An address was classified as formal if the patient used the title (doctor) with or without the doctors’ name and as informal if the doctor’s name without title or nicknames were used.
the resident rather than the consulting female physician, but a control of a female resident assisting in translation was missing. In a setting with a mix of male and female physicians, such as an emergency room, the formality of addressing physicians can be further investigated.

4.1. Study limitations

There are several limitations to this study. Based on the predefined exclusion criteria, many patients were excluded from this study since they did not directly address the physician. This could potentially account for the discrepancy between the observed results and research on sex differences in other medical aspects, such as professional recommendation letters and speakers’ introductions, which always include a specific addressing. The high rate of patients which did not use any kind of title or name to address the physician during the encounter, even when presenting questions or discussing their medical situation, can be by itself regarded as a striking observation. These findings underscores the importance of further research of gender bias in the field of patient-physician interaction and the development of better tools to characterize this complex interaction. Furthermore, the study included a single female physician and a single male physician, hence distinctiveness can be attributed to their individual personalities rather than solely their gender. Additionally, the male physician’s patients were in average older which can influence the tendency to use formal language. The formality of the interaction between the patients and the physicians could have been influenced by the presence of the investigator in the room. Lastly, to concentrate on the gap between women and men in patient-physician interactions, the study has not addressed the multidimensionality of gender.

5. Conclusions

This manuscript explores the under-studied aspect of gender bias in the attitudes of patients toward their treating specialists. While the quantitative analysis of the verbal form of address revealed no apparent difference between male and female physicians, the qualitative analysis showed gender discriminations with patients more inclined to formal gestures toward the male physician. This implies that although explicit manifestations of gender bias may have subsided, implicit gender bias still exists and may be observed in several aspects of academic and clinical medicine. Increasing awareness towards implicit manifestations of gender bias is the first step in addressing the existing and future disparities between male and female physicians. Battling gender bias in medicine requires deliberate strategies which start with making the unconscious conscious. This manuscript suggests broadening the research of gender bias in medicine into the field of patient-physician interactions and its integration into clinical practice and medical education.

Funding

The authors received no direct funding for this research.

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Disclosure statement

No potential conflict of interest was reported by the author(s).

Citation information

Cite this article as: Examination of inattentive gender bias in medicine: Patients’ form of addressing male and female physicians, Efrat Naaman, Luda Gelfand Saar, Liron Naftai Ben-Haim, Yoreh Barak, Nitai Bar, Cecilia Labardini & Shiri Soudry, Cogent Social Sciences (2022), 8: 2136605.

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