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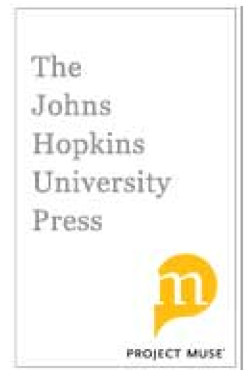

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RESEARCH ARTICLE

Stigmatizing Mothers: Qualitative Analysis of Language in Prenatal Records

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Abstract. Pregnant people experience moral judgment in healthcare settings that may be coded into clinical documentation. Stigmatizing language in medical records transmits bias between clinicians, potentially exacerbating disparities in maternal morbidity and mortality. We examined obstetrical records from 100 randomly selected patients who received prenatal and delivery care in an academic hospital system. Qualitative analysis sought to identify linguistic features conveying negative attitudes or moral judgment, revealing themes of epistemic injustice: (1) discrediting patient testimony as incompetent, unreliable, and hysterical; (2) unnecessary details that are objectifying, stigmatizing, or unprofessional; and (3) judgments of maternal fitness, where women are labeled "bad mothers" by emphasizing neglectful, selfish, and debauched characteristics. We conclude by advocating for further validation of our findings, revisiting medical education paradigms, and supporting the development of natural language processing (NLP) technologies to detect and intercept stigma.

Keywords. Epistemic Injustice, Linguistic Bias, Medical Records, Pregnancy, Stigma

Introduction

Natural language in electronic health records (EHR) reveals biases in how patients are described, with implications for clinical experiences and outcomes (Beach et al., 2017; Pennebaker et al., 2003). Early addiction medicine research showed that when patients are portrayed as "substance abusers," versus "having

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substance use disorders," clinicians are less sympathetic and find patients less deserving of treatment (Kelly & Westerhoff, 2010). Qualitative analysis of medical records of people with sickle disease-related pain identified language that reinforced negative stereotypes, blamed patients for their symptoms, and cast doubt on patient testimony (Goddu et al., 2018). Using randomized vignettes, stigmatized depictions of patients with sickle pain produced more negative attitudes and reluctance to prescribe opioids among clinicians. Further evaluation across internal medicine and neonatal ICU contexts demonstrated significant gender and racial differences in expressions of positive and negative attitudes toward patients (Park et al., 2021; Shaikh et al., 2023). Collectively, these findings suggest a mechanism for bias transmission between clinicians that may potentiate health disparities (Chapman et al., 2013; FitzGerald & Hurst, 2017).

Understanding the prevalence and sequelae of stigmatizing language in EHR has a newfound urgency with rapidly advancing natural language processing technologies and the expanding use of large language models in clinical applications (Thirunavukarasu et al., 2023). Obstetrical practice, fraught with morally complex issues and notorious disparities in morbidity and mortality, is a critical setting for further exploration of stigmatizing language in EHRs (Marshall et al., 2007). Importantly, a 2023 survey found 20.4% of surveyed respondents experienced at least one type of mistreatment while receiving maternity care (Mohamoud et al., 2023). The highest prevalences of mistreatment were reported by Black (40.1%), multi-racial (39.4%), and Hispanic (36.6%) mothers, indicating there are racial disparities in access to high-quality maternal care (Mohamoud et al., 2023). The implicit biases that contribute to such mistreatment have potential to alter clinical decision-making, resulting in increased maternal morbidity and mortality (Saluja & Bryant, 2021). Thus, addressing potential sources of bias in patient care, including medical records, is essential to help bridge health disparities and improve maternal outcomes.

Further, the many sociocultural, religious, and political norms surrounding pregnancy and motherhood create ample opportunity for moral judgment. Pregnancy requires navigating controversial topics from prenatal screening and contraception to sexually transmitted infections and substance use (Geist & Bull, 2013). Frequent prenatal visits elevate clinicians' role in shaping norms and experiences. For instance, expectations surrounding mothers' responsibility for infant health underlie breastfeeding recommendations via "breast is best" dictums and the designation of "baby-friendly hospitals" (Johnston & Swanson, 2003). These morally complex situations may manifest in stigmatizing language in maternal medical records.

Previous work applying the linguistic bias framework to birth admission notes found replication of negative language categories identified elsewhere, plus additional foci related to social and behavioral risks and power and privilege dynamics (Barcelona et al., 2023). Here, we perform an in-depth qualitative analysis of stigmatizing obstetric records spanning prenatal through postpartum periods to probe unique moral and sociological dimensions of evolving bias. Drawing on the foundational framework of Beach et al. (2021) and philosophical literature, we propose a taxonomy of stigmatizing language relevant to obstetrical care. We incorporate a novel interpretation of linguistic biases through motherhood providing representative quotations and contrasting examples to illustrate how natural language uses may stigmatize and propagate judgment against birth populations.

Methods

We examined linguistic features to explore potential stigma conveyed through the narrative components of obstetrical documentation (IRB #00149904). We reviewed 100 randomly selected records of patients with ≥2 prenatal care visits and who gave birth in one of four sites within an academic hospital system in 2017. The population spanned differences in age, race, parity, employment, insurance, and educational status (Table 1).

This work focuses on the narrative content of clinical notes, comprising unstructured free text

Table 1
Demographics

Maternal Age at birth admission	29.9	Range 15-42, SD 6.4336
Gestational age at admission	37.888	Range 24+4 -41+3, SD 3.0521 weeks
Race/Ethnicity		
Black	58%	
White	27%	
Asian	6%	
Other	9%	
Hispanic (vs. non-Hispanic)	11%	
Parity		
0	31%	
1	37%	
2	18%	
>/= 3	14%	
Primary Insurance		
Medicaid	45%	
Employee Health Program	19%	
Private	26%	
Medicare	4%	
None	8%	
Indication for Admission		
Induction of labor	41%	
Spontaneous rupture of membranes and/or labor	39%	
Primary or Repeat Cesarean Delivery	16%	
Other	6%	
Role of Primary Note Author	(n=46)	Mean 2.2 notes each; range 1-7 notes, SD 2.0
PGY 1/2 (Junior) Residents	77%	
PGY 3+ (Senior) Residents	12%	
ARNP/CNM/Social work	11%	
Attending Cosigners	(n=49)	Mean 2.0 notes each; range 1-11, SD 1.9

that encompasses clinicians' natural conventions and language use. Our analysis began with the "history and physical note" (H&P) for the birth admission, using a common OB template with 14 predefined subsections (e.g., chief complaint, history of present illness, past medical history). Junior-level residents (77% PGY1 or PGY2) authored most H&P notes, frequently with senior resident oversight and always with an attending narrative attestation, while midwives authored a minority. We coded for the presence of potentially stigmatizing language, categorizing quoted statements by the note subsection where they appeared. Additional columns captured qualitative findings, field notes, and impressions per subsection. Columns were left blank when a particular subsection did not contain potentially stigmatizing language.

Coders documented findings per H&P subsection to quantify relative prevalence of potentially stigmatizing language. Some cases had minimal instances, while others had over 30 subsections flagged for stigma. We analyzed all physician, social work, and nursing notes from prenatal, intrapartum, and postpartum course for 20 patients with the highest frequency of biased language instances, plus 10 unbiased controls. For qualitative review, we conducted content analysis of narrative sections using a constant comparative method (Hsieh & Shannon, 2005; Weber, 1990). We started with manifest linguistic features from the foundational framework of stigmatizing language categories in the internal medicine context (Beach et al., 2021; Harris, 2000). Latent content analysis was further informed by sociological literature on the stigmatization of pregnant women, as well as ethics literature on stigma and epistemic injustice (Barcelona et al., 2024; Kleinheksel et al., 2020). We considered stereotyping, blaming, and discrediting through linguistic cues like direct quotes (e.g., *had a "reaction" to the medication*), judgmental words (e.g., *"claims"* or "*insists*"), and evidentials—that is, elements that indicate the source of the information given (e.g., reporting a patient's experience as *"hearsay"*).

Starting in 2019, medical notes were cross-coded by two independent reviewers to ensure interrater reliability with disagreements resolved through discussions. One coder was a bioethicist and attending obstetrician/gynecologist at an outside academic medical center and the other was a bioethics staff scientist who transitioned to medical school. The physician coder was a senior resident at the source hospital in 2017. Thus, they used customized settings within the research context of the EHR (Epic Systems) to enable review of notes without revealing author identities. The latter coder reviewed exported PDFs of notes on a secure analytic framework platform (SAFE) virtual environment designed for the analysis of protected health information. Both coders were blind to one another's coding and kept independent records and notes.

After initially reviewing 20 records, coders met with a third investigator to identify primary codes from the emerging themes: "unnecessary detail," "discrediting," and "maternal fitness." Coders continued independently reviewing batches of 20 records and meeting as a team to discuss examples until no new themes emerged. A total of 100 patient records were reviewed to confirm saturation. After solidifying the taxonomy of coded linguistic bias, note authors' identities were revealed during research meetings. This autoethnographic approach allowed the primary coder to reflect critically, providing the team with rich cultural insights and enhancing narrative analysis via extended observations of note authors immersed in relevant obstetrical milieus. Initial codes were not altered after identities were revealed. Discourse analysis revealed several cases where prevalence of stigma was discordant with expectations based on first-hand impressions of authors' bedside manner.

Findings

Stigma is the transference of unjustified negative attitudes about a person's attribute that is "deeply discrediting within a particular social interaction" (Link & Phelan, 2001). Three primary themes emerged regarding how language may convey negative attitudes or disrespect: (1) discrediting the patient as a source of information, (2) clinically unnecessary yet stigmatizing details, and (3) judgments on maternal fitness (see Figures 1 & 2).

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Figure 1. Testimonial Injustice in Pregnancy Records: *Key Themes, Implications, Features, & Representative Quotes*

Stigmatizing language most frequently appeared in unstructured text within the history of present illness (HPI), current pregnancy history, social history, and the problem-based assessment and plan section. While the first theme recapitulated prior work, the latter two themes were novel in this context.

Junior residents more commonly used biased language, though frequency varied among authors at each training level. The language used in midwives' notes was similar to that of junior residents' notes. Attendings wrote less overall, but sometimes included clear examples of deep-seated implicit bias, particularly regarding maternal fitness. Chief residents were between juniors and attendings in terms of length of documentation and frequency of bias. Physicians and midwives used standardized note templates with alternating auto-populated and free-text sections, whereas social

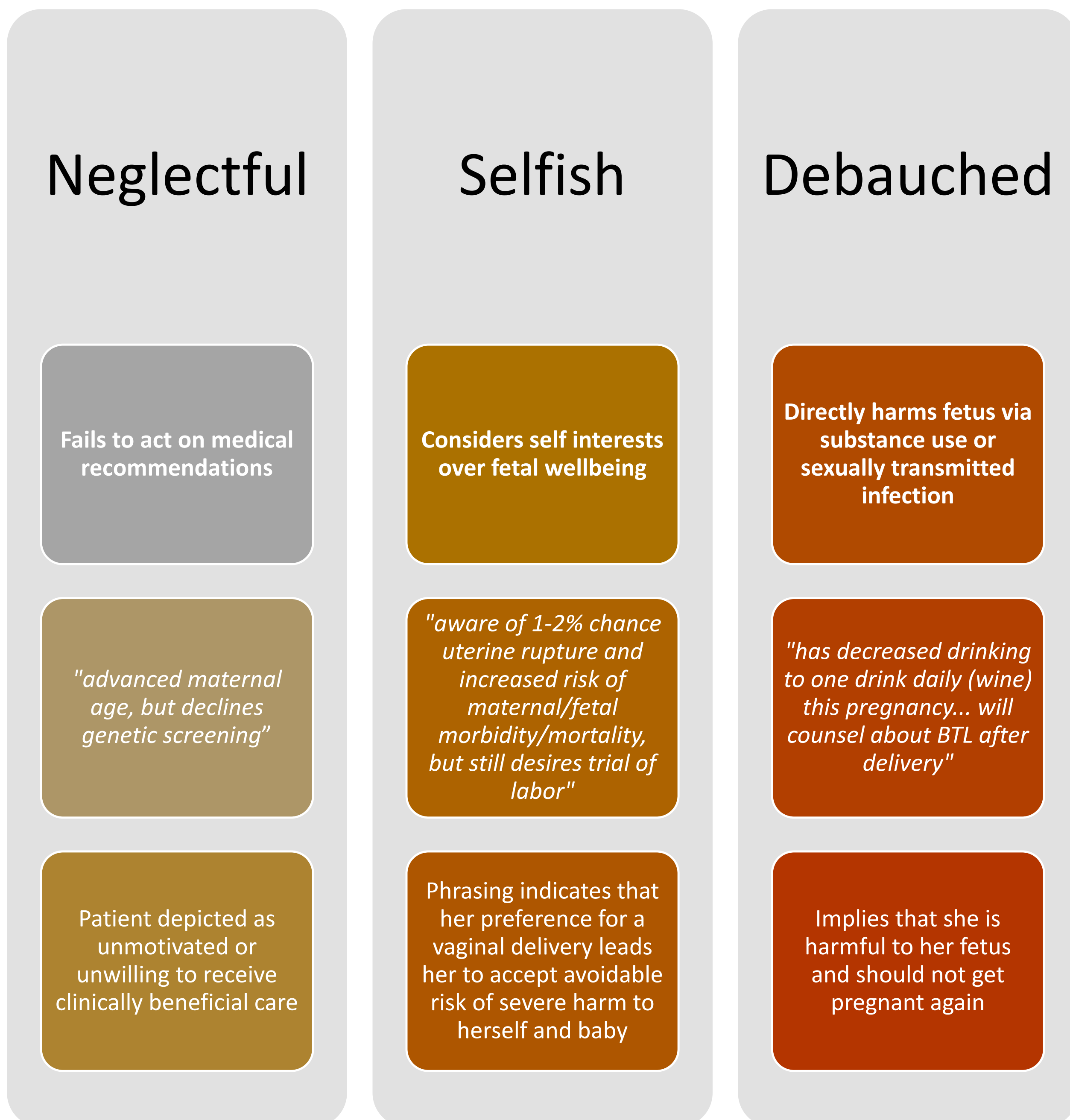

Figure 2. Categories of Judgement on Maternal Fitness: *Moral Category, Key Feature, Representative Quote, Contextual Explanation*

workers and nurses wrote more standalone free-text narratives, employing informal, non-medical terminology. There was strong intrapersonal consistency in the prevalence of stigmatizing language across multiple notes.

Discrediting patient testimony

Standard linguistic forms, such as referring to the presenting symptoms as a *"chief complaint"* and that a patient *"denies alcohol/tobacco/drug use,"* reflect the medical profession's baseline skepticism towards

patients. Selective qualifications like "*reports 12-week ultrasound but records not available*," and "*received prenatal care . . . per patient,*" cast doubt using judgment words (i.e., "reports . . . but") and evidentials, framing the patient's report as unproven hearsay (Beach et al., 2021). By contrast, we assume that a competent adult would remember *whether they received prenatal care,* and typically, the *number of weeks pregnant* they were at the earliest ultrasound if asked during the given pregnancy. Notably, these comments appear within the HPI, a "subjective" portion of the H&P wherein the patient is the de facto information source. Additional emphasis of "*per patient*" is redundant, and may function as a priming heuristic, implicitly inviting readers to question the validity of the patient's statements.

An example highlighting the contradiction between subjective and objective findings states: "*Patient reports unbearable contractions, but cervix remains unchanged,*" appearing to discredit her pain characterization. The statement *"Denies fetal movement until seen on ultrasound,"* questions whether the patient genuinely could not feel movement before visualization. In contrast to simply noting "decreased fetal movement," or conveying "concern about the lack of fetal movement," the judgment word "denies" may evoke an image of the patient insisting there is cause to be concerned about fetal status until fetal movement is undeniably visualized on bedside ultrasound. As fetal movement is assumed to be readily appreciated in third-trimester gestations, this sentence construction may imply either that the patient lacks insight into her bodily symptoms, or that she is excessively anxious, evoking stereotypes of women as hysterical. In this setting, comments about the absence of reassurance "until" an ultrasound was performed may hint at the perception that the patient was intentionally deceptive for the secondary gain of a medically unnecessary ultrasound.

References to previous triage visits, such as *"Patient was seen earlier today in triage for same complaint,"* or "*Presented yesterday evening after losing her mucous plug,"* may portray the patient as prone to malingering, despite the recognition of labor as physiologically painful. At this point, comments about *"multiple prior labor checks,"* sometimes coded as "false labor," served no clinical purpose, as the decision to admit the patient for active labor or ruptured membranes was already confirmed (Eganhouse, 1991). In some cases, particularly for primiparous patients, these references might insinuate a critique of the patient's incompetence regarding normal pregnancy symptoms, prodromal labor, or hospital admission criteria.

These linguistic forms perpetuate skepticism towards the patient's symptoms and credibility across settings. Notably, junior residents were often the primary authors of these notes, facing demanding workloads and pressure to assimilate into their training environment's culture. In the context of busy, primarily resident-led obstetrical services, such comments may also represent frustration about the burdens imposed upon trainees and staff by premature presentations.

Clinically unnecessary details

The theme of "recording unnecessary details" involves personal, intimate language that lacks clinical utility. For the common presentation of vaginal fluid leakage, relevant information includes timing, volume, and color of the amniotic fluid. Describing a patient who *"woke in a puddle on the bed . . . multiple gushes soaking her underwear and trickling down her leg and all over the floor,"* when presenting with ruptured membranes provides an unnecessarily vivid account, exposing her to potential stigma. While potentially well-intentioned efforts to reflect the patient's voice or to assure the reader that this was a convincing story about ruptured membranes, unedited disclosures in the record can objectify the woman's body, compromising privacy obligations. These granular details stand out compared to other narrative portions of the H&P and similar admissions.

Ruptured membranes entail a well-known, clinically straightforward physiologic phenomenon. Recording graphic details about a person's particular episode draws attention to the visceral image of that person's bodily fluids out of her control, which may be seen as humiliating or "unclean" (Wutich & Brewis, 2019; Kissling, 1996). Chronicling certain verbal disclosures in the EHR appears to objectify the woman's body, exposing her to all third parties who access the H&P for healthcare or

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business operations. Selective documentation may compromise privacy and propagate vulnerability contrary to the duty of confidentiality and HIPAA's "minimum necessary" mantra (U.S. Department of Health and Human Services, 2003). However, it is possible the use of graphic details is defensively included in situations where an intervention with the potential for iatrogenic harm is being delivered, particularly in light of legal considerations. For example, in cases of premature rupture of membranes leading to labor induction, providers may be documenting additional details to emphatically corroborate the rationale for the intervention, even when fewer details would suffice to substantiate that clinical criteria for induction were met.

Sometimes, clinically relevant statements are infused with gratuitous detail. For example, the timing of a patient's most recent oral ingestion, including the last solid and liquid intake, is relevant for surgical planning. Details like *"last PO [per os] intake was Swedish fish/chicken wings at 4 am,"* highlight the patient's perceived poor choices. During an inpatient admission where there is no intention or effort to address her diet, these details evoke tacit disapproval, rather than concern for her nutritional status. This category of unnecessary details was especially prone to stigmatizing interpretations when referring to patients who are obese, or when the specific foods were associated with racial, socioeconomic, or substance-use-related stereotypes.

Documenting consumption of *"Swedish fish/chicken wings at 4 am"* suggests lack of discretion in the patient's narrative. In a university hospital setting, the depiction of quirky, unflattering eating habits in a birth admission note may serve a further purpose: comic relief or an "inside joke" among a class of junior residents. A rigorous, alternating labor and delivery call schedule ensures that multiple residents will independently review the note throughout the birth hospitalization, creating many opportunities for stigmatization which persist long after her surgery is over.

Codifying extraneous, intimate and potentially embarrassing details magnifies patients' exposure to the medical gaze, compounding vulnerability without medical justification. Unlike more banal minutia, objectifying and stigmatizing details appeared inherently memorable or entertaining, particularly among otherwise sterile EHR data. Stigmatizing details appeared mostly in gender-neutral contexts, suggesting potential relevance across specialties, whereas objectifying subthemes arose more commonly within gendered, obstetrics-specific content.

Informal, verbose language

Sub-themes include overly informal, verbose language evoking a distancing "quoting" of patients, and inclusion of potentially embarrassing details that appear inherently memorable, yet irrelevant (Beach et al., 2021). As other scholars have identified, we found that quotes were used to discredit patients or otherwise distance the author from the narrative. For example, one clinician noted of a patient with chronic shoulder pain from an athletic injury: *"She has learned to 'deal with it myself' by taking Percocet from people she knows who get the meds to help with the chronic pain, and she 'pops it in myself when it comes out.'"* The text is overly wordy and informal, fails to employ standard medical terminology, and the quotes do not add meaningful clinical insight.

We also frequently observed apparent quoting, such as stating that a patient *"Reports having hip pain, oxycodone 15 helped taking the edge off."* By indirectly quoting without quotation marks, the author may use the patient's words to subtly imply disapproval or hint at pain-seeking behavior, hidden within the clinician's editorial content. Alternatively, social history stating a patient was "*previously in jail for stealing*" employs colloquial language that may or may not be directly from the patient. This phrasing appears to highlight the moral transgressiveness of theft, rather than the clinical significance of incarceration. Unqualified, informal statements about past transgressions may lend themselves to judgments about one's maternal qualities, or lack thereof.

Excessive language may encode an image of the patient as a "poor historian," such as noting that she *"does not remember dates"* of remote prior miscarriages, drawing attention to her insufficient record-keeping or lack of care regarding adverse

pregnancy outcomes. Similarly, the remark *"Patient has no idea when last pap smear was"* emphasizes characteristic negligence of self-care. Someone who has "no idea" when they received an important health screening is depicted as disregarding their health, calling into question their motivation or ability to ensure a child's welfare (Roberts, 2022). By contrast, the same information is conveyed if the author leaves the date field blank, provides an approximate timeframe, or a more succinct "unknown." Building on the themes of discrediting patient testimony and the inclusion of unnecessary details, a third category emerged with unique relevance to pregnancy care: value judgments about maternal fitness.

Moral judgements on maternal fitness

Judgments of maternal fitness arose against a backdrop framing pregnancy care as maternal-fetal conflicts (Harris, 2000). For example, a study of decision-making on labor and delivery found that a sense of maternal obligation to make "sensible" decisions may contribute to higher rates of cesarean births (Bryant et al., 2007). Some language in the EHR appeared to reflect implicit value judgments about patients' maternal characteristics. We identified three sub-categories suggesting negative attitudes of mothers as neglectful, selfish, and debauched.

Neglectful: Failure to act on behalf of fetal best interests

Neglectful comments emphasized patients declining prenatal recommendations, as in *"advanced maternal age, but declines genetic screening,"* or *"Sickle cell trait- declined testing, partner's status unknown."* Nonadherence to clinical recommendations intended to benefit the patient and her fetus is noted here without detailing relevant reasons. While "non-compliance" often evokes suspicion in most clinical settings, declining potential benefits for the fetus, as opposed to oneself, may imbue the comment with a sense of neglectfulness. This perception was notable, notwithstanding the nature of genetic screening, where opting out may be appropriate based on a patient's clinical circumstances, values, or insurance. Although there may be no intention to highlight the failure to act as a negative characteristic, indicating the patient's rejection of a clinical offering can implicitly position her as neglectful.

Indictments of maternal character were magnified by language documenting "non-compliance" while simultaneously emphasizing a patient's awareness of clinical recommendations. For example, *"has yet to complete 28-week labs," "knows she should be taking iron, but not taking iron,"* or "*still has not made appointment, number provided again*," highlights a failure to act despite being well-informed. These comments were most common in outpatient prenatal records, demonstrating exasperation over weeks to months. Characteristically, the patient's *awareness* of recommendations was emphasized, without corresponding elaboration on her reasons for declining or barriers to compliance.

Collectively, these comments indicate that knowledge of the recommended action was insufficient to motivate the patient to act in her or the fetus's best interests. Intentional failure to follow clinical recommendations may be interpreted as disregard for fetal wellbeing out of laziness or indifference. Statements indicating that the patient was *"aware of risks"* appeared to simultaneously assign blame to the patient for inaction while exonerating clinicians. Throughout the records we reviewed, the documentation appeared to attribute patients' nonadherence to the standard of care to maternal failure rather than medical oversight or inadequate counseling.

Language suggesting a judgment against maternal fitness demonstrated an inverse pattern compared to the discrediting or overly-detailed categories mentioned earlier. Instead of emphasizing the patient's incompetence with derogatory extraneous information, neglectfulness may be implied through language emphasizing the patient's competence, suggesting that she "knows better," while conspicuously lacking exculpatory details that could have justified her decisions. Insinuating neglectfulness is particularly worrisome in childbirth admissions, where racial and socioeconomic biases may influence clinical judgments of

neglect, potentially exacerbating disparities in who is deemed deserving of criticism, reporting, and interventions for child abuse (Roberts, 2022).

Selfish: Putting self-interest over fetal wellbeing

Selfishness was implied when describing a patient's choice that seemingly prioritized self-interest over the fetus. Here, the patient's decisions are contrasted with what would be expected of someone solely focused on the wellbeing of her unborn child. For instance, an HPI indicating admission for *"elective social induction of labor"* employs the terms "elective" and "social" to question the legitimacy of her reproductive choice, undermining the reasonableness of her plan for a 39-week induction considering childcare and transportation issues (Gross et al., 2020).

This disconnection from the "selfless" maternal archetype often elevated maternal self-regard at the perceived expense of fetal well-being. Statements paraphrasing the patient's response to standard triage questions, such as *"hasn't paid attention to fetal movements because of painful contraction*s," subtly imply prioritization of the discomforts of labor pain over her duty to protect her fetus. Failing to prioritize fetal well-being becomes increasingly reproachable when framed as a self-serving quest for pain relief. These remarks were significant within a cultural context where women are expected to endure labor pain, and "natural labor" is sometimes seen as morally superior, leading to judgments of women who struggle with labor pains as inferior mothers.

Judgments of selfishness may be most severe when medico-legal concerns prompt documentation of maternal decisions conveying a willingness to accept increased risk, regardless of clinical appropriateness. For example, stating that a patient is *"aware of 1-2% chance [of] uterine rupture and increased risk of maternal/fetal morbidity/mortality, but still desires trial of labor,"* may serve as a basis for legal absolution if adverse outcomes occur. However, this statement also frames a patient's decision within the maternal-fetal conflict, inviting judgment of her values and legal standing. In this scenario, a vaginal birth after cesarean (VBAC) might be medically or psychologically beneficial for mother and baby, potentially aligning with the obstetrician's recommendations. However, such language may inadvertently portray the patient as deliberately defying professional standards, risking the wellbeing of both the mother and fetus for the sake of a natural birthing experience. Notably, one of the randomly selected patients in the cohort was an attending physician whose H&P included a plan for a trial of labor after caesarian (TOLAC) without documentation of counseling or qualification regarding her awareness of the risks.

Debauched: Moral contamination of the fetus via maternal character

The final sub-category of stigmatizing statements suggested the mother *herself* as the source of harm, impacting current pregnancy and future fertility management. This judgment against maternal fitness focused on patients' sexual behavior and substance use, where infectious agents or toxic chemicals in the mother's body appeared to present direct harm to her fetus, even in their absence. These comments combined questioning the reliability of testimony, unnecessary details, and omission of patient reasoning, fostering stigmatized perceptions of deviance within cultural and historical traditions of the maternal role as a moral compass (Murphy, 2000).

An illustrative case involved a problem-based history section from prenatal notes, which included comments regarding herpes simplex virus (HSV) spanning several months. First, the patient had *"positive serology but no history of outbreaks,"* i.e., she had HSV antibodies in her blood, though she reported never developing herpes infection symptoms. She was counseled that prophylactic suppression was not recommended for positive antibodies without a history of outbreaks, but subsequently, "*She wanted Valtrex prescription,"* which was provided at her request. Later, she "*noted lumps this pregnancy but did not have [them] evaluated."* Lastly, in the third trimester, when HSV suppression would be indicated to minimize the neonatal risk of perinatal transmission during delivery, she was "*not taking [Valtrex] since 15 weeks."*

The cumulative language portrayed the patient as potentially deceptive, incompetent, hysterical, negligent, and fickle. Notably, a 55-word summary

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Past Medical History

Diagnosis	Date
• **Abnormal Pap smear of cervix** *19 or 20 years old; all normal since then; last 2014*	
• **Asthma** *Inhaled steriods; no intubations; steriods with flare;*	
• **Chicken pox** *childhood*	
• **Fibroid** *subserosal, 5-6cm for one of them*	
• **Herpes simplex virus (HSV) infection** *genital; Valtrex with first pregnancy*	
• **Urinary incontinence** *mild urgency; for many years, no change since birth*	
• **STD (sexually transmitted disease)** *HSV*	

Figure 3. Past Medical History section of H&P note demonstrating duplication of sexually transmitted infection history

of the HSV prenatal care narrative appeared twice within her H&P, compared to a 34-word summary of the superimposed preeclampsia, which prompted her delivery admission. The language in her admission note suggested she was endangering her child, particularly as she *"elected to TOLAC,"* despite low (19%) calculated odds of success and potential HSV risk mitigation via repeat cesarean. Later, a resident documented, *"Today patient reports she is no longer interested in continuing with a trial of labor,"* and the attending noted, *"She initially requested TOLAC . . . After 12 hours of induction patient requested a repeat cesarean section."*

Sexual and substance use history details were disproportionately represented throughout the EHR, sometimes redundantly. For example, it was standard for a prior diagnosis of chlamydia with subsequent negative test of cure to appear in five different H&P sections compared to "*uncontrolled hypertension*," which appears only three times, despite its greater clinical significance. At times, there was further redundancy in auto-populated lists within the H&P template (see Figure 3), where the HSV diagnosis is duplicated within the medical history section, in addition to appearing elsewhere. Substance use history was similarly documented in multiple sections throughout the H&P, including occasional duplications within the sections themselves, regardless of whether it was an active issue at the time of admission.

Repetition may bias perceptions, associating the patient with stigmatized diagnoses (Murphy, 2000). If repeated in twice daily verbal sign-outs during birth hospitalization, a history of sexually transmitted infections and substance use diagnoses may be accentuated in clinicians' minds, regardless of relevance for inpatient management. Interestingly, the H&P for the patient who was herself an attending physician included simply, "*HSV- on suppression*" with an oblique, duplicate reference to Valtrex on her medications list. However, the absence of HSV lesions was not explicitly mentioned in her

physical exam, whereas others' notes included a statement such as, *"no e/o [evidence of] lesions on SSE [sterile speculum exam]."* Further departing from the standard documentation observed for this condition, HSV was neither included in her assessment and plan section nor recapitulated in the attending attestation.

Another patient's prenatal note stated that she *"admitted to THC abuse and described the abuse as recreational. SW [social work] discussed the implications of on-going substance abuse during pregnancy such as allegation of neglect leading to CPS [child protective services] intervention at delivery."* The phrasing suggests that the patient's substance use during pregnancy could suffice to label her as neglectful, warranting CPS involvement at delivery. Legalistic terms, such as "admitted" and "abuse," adapted to the clinical context, may carry implications beyond the immediate medical setting, potentially triggering state-authorized custody investigations. While the clinician may have intended to encourage remediation, the language instead emphasizes blame and scolding, rather fostering encouragement or offering supportive resources to address substance use. This approach convey a presumption of guilt, framing CPS intervention as a necessary response to "ongoing substance abuse" in the interest of protecting a child. This language was especially striking for this case of THC use (Gross et al., 2022).

A postpartum social work note from another record indicated, *"Parent informed of need to discuss her history of opiate abuse with [US City] CPS intake to determine a need for CPS intervention prior to maternal/newborn discharge. Parent is very anxious around pending CPS intervention and fearing removal . . ."* This patient used no opioids during her pregnancy and had multiple negative toxicology tests, including upon her admission for childbirth. History of "opiate abuse" appeared to convey distrust of her testimony regarding abstinence, and documentation of concerns about ongoing risk to the newborn may reflect a labeling of "dangerous" to her maternal character, as opposed to the illicit substance itself.

On the other hand, documentation frequently mentioned patients' efforts to decrease, wean, or taper substance or cigarette use during pregnancy. Some prenatal records included the exculpatory comment, *"quit when found out she was pregnant,"* or *"stopped when found out pregnant,"* typically for patients whose substance use was limited to THC/marijuana. Comments demonstrating a patient's effort to reduce or eliminate substances may represent an attempt to vouch for maternal character. Sometimes, the statements were qualified i.e., *"patient reportedly quit this pregnancy,"* or, *"still at ~10 cigs daily,"* typically for patients with more extensive substance use or other stigmatized history features.

Qualified comments about patient efforts to abstain from substances may indicate judgment that maternal effort was insufficient or disingenuous. Elsewhere, the pregnancy history for a patient with alcohol use disorder noted, *"has decreased drinking to one drink daily (wine) this pregnancy."* While the statement may be accurate, its construction implies criticism of the patient's behavior as harmful to her fetus, particularly given cultural norms and well-publicized, CDC-endorsed dictums of "no known safe amount of alcohol use during pregnancy" (Centers for Disease Control and Prevention, 2024). Lack of counseling or referral documentation made the statement appear more marginalizing or sarcastic. The attending's admission note indicated, *"will counsel about BTL [Bilateral tube ligation] after delivery,"* potentially indicating an implicit judgment that it would be preferable for her to not have more children.

One of the prenatal records included hospitalization for pelvic inflammatory disease, a condition commonly caused by ascending sexually transmitted infection, at seven weeks of pregnancy. The discharge summary from that admission illustrates how the combination of severe sexually transmitted infection and polysubstance use history appeared to elicit the greatest degree of reproach for maternal fitness:

> . . . [S]he continued to have pain out of proportion to exam/laboratory findings, severe enough to require repeated doses of IV narcotics . . . a utox [urine toxicology] was sent after she had received opiates and was positive for these as well as THC. She subsequently endorsed hx [history] of opiate use, though denied recent use over month prior to admission . . . Patient

> had sw [social work] eval and was counseled at length regarding pregnancy options, including possibility of CAP [Center for Addiction in Pregnancy] program if she decided to proceed with pregnancy.

Here, the clinician casts doubt on the patient's testimony about her pain and her statement that she has not used opiates in the past month, i.e., since learning of her pregnancy. The note further indicates that the patient was "counseled at length regarding pregnancy options if she decided to proceed with pregnancy," implying that abortion was introduced as a potential course of action without clear evidence that the patient viewed the pregnancy as undesired. Both elements of this note suggest implicit bias, framing the patient as unfit for motherhood based on assumptions rather than evidence.

The importance of 'family planning' for patients with substance use and sexually transmitted infection history was emphasized, often overshadowing immediate clinical concerns. Another patient was admitted in active labor, her H&P indicating, *"[I]n too much pain to discuss BCM [birth control method], would like to discuss further after epidural."* The attending noted, *"Will be treated for gonorrhea and chlamydia. Contraceptive plan needs to be readdressed when she is more comfortable."*

Discussion

Examination of obstetrical documentation revealed language that may reflect, perpetuate, or establish bias against pregnant women by discrediting patient testimony, including extraneous details, and judging maternal fitness (Bryant et al, 2007; Kukla, 2005). This analysis identified language that undermines patient credibility by including constructions differentiating "subjective" narratives from "objective evidence." Statements accentuating distress were juxtaposed with discordant physical examination findings, evoking stereotypes of hysteria and implying exaggeration symptoms for secondary gains, such as an early labor induction or extra ultrasound (Pennebaker et al, 2003). Redundancy highlighted the patient as the information source, undermining their perceived competence or reliability regarding expectations of self-knowledge and appropriate pregnancy care (Kelly & Westerhoff, 2010).

By comparing them unfavorably to clinical expertise, these comments raise concerns about patient motives. Such discrediting demonstrates epistemic injustice, where patients suffer injustice in their role as knowers. According to Fricker (2017), testimonial injustice happens when a listener unfairly diminishes a speaker's credibility or undermines their knowledge capacity. Likewise, implications about malingering in the context of labor presentations are especially troubling and particularly susceptible to reifying patterns of dismissing women's symptoms (Merone et al., 2022). Credibility downgrading may lead to self-doubt and discrediting one's testimony, generating reluctance to self-advocate and creating the potential for adverse outcomes (Macphee, 2019).

Hermeneutical injustice occurs when a lack of collective interpretive resources hinders someone from making sense of their social experiences. Our analysis suggests that the inclusion of prior triage visits during a subsequent admission may reflect resentment about workflow burdens related to the "nuisance" of patients seeking care that is deemed clinically unnecessary (Heimer & Staffen, 1995). Clinically unnecessary details are a novel category of stigmatizing language that was most prevalent across the prenatal records of patients with the greatest frequency of biased language in their admission notes.

Superfluous intimate details, particularly those exposing bodily privacy, may objectify women's bodies, particularly when describing vulnerable and physical aspects of pregnancy like ruptured membranes or labor. In addition, overly-specific words provided unnecessary details, creating opportunities to stigmatize patients by invoking established stereotypes, as with named food choices. In both instances, a selective subset of the patient's voice was represented with a high degree of fidelity, typically featuring embarrassing or unflattering elements. In some cases, failure to distill the clinically relevant aspects of a patient's narrative enabled the inclusion of memorable,

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idiosyncratic content, potentially for the entertainment of future readers. This documentation practice may uniquely introduce a de novo harm of stigmatization, as opposed to merely reflecting preexisting stigmatization.

Documenting personal details without clinical utility may unwittingly violate the trust between patient and provider via indiscreet repetition of a confidential disclosure in a permanent record that is accessible to those beyond that specific fiduciary. By codifying the singular intimacy of that vulnerable moment, the patient is on display for a variety of other readers, including those indirectly involved in patient care (Fernández et al., 2021). Such disclosures compromise privacy without justification of attendant health benefits. Moreover, the inclusion of such disclosures does not productively contribute to the intended purposes of clinical notes, which include medical recordkeeping and communication, billing, and legal documentation. This suggests there may be alternative motives, including pressures imposed by workplace cultures, that perpetuate the documentation of extraneous personal details. Institutional cultures may normalize such practices, as has been previously described in the normalization of misogynistic language in workplaces, thus perpetuating the use of unnecessary personal details in trainees' documentation (Manne, 2017).

Characteristic informal or verbose language was used to stigmatize patients, appearing in the sporadic use of direct quotations, as noted elsewhere (Beach et al., 2021). However, indirect quotes of patients were far more common, often employing colloquial language instead of medical terminology, most notably in contexts where moral judgment may be more likely. This finding underscores how informal or verbose word choices may signal biased content, even when such statements are not flagged by quotation marks. Blending patient and provider voices in this way can function to delegitimize the patient's perspectives, as the language attributed to the patient is more likely to appear unprofessional or unreliable.

Critically, medical education paradigms teach trainees to document "chief complaints" and HPI in patients' own words for the explicit purpose of giving patients a voice in their medical records (Bickley et al., 2013). Though nice in theory, we demonstrate how unreflective implementation of this practice creates more opportunity for the distribution of biased language than that which occurred in the era of handwritten notes. Perhaps unsurprisingly, junior residents more consistently demonstrate a greater prevalence of unnecessary details, in part due to their recent medical school teaching, greater time spent in contact with patients, and inherent learning curve delineating what is clinically relevant.

There is an art to summarizing patients' narratives that comes with time: senior residents and attending-level authors' documentation was more succinct, including only pertinent clinical information, with a trend that appeared inversely proportional to the number of years in practice. However, we stipulate that the most inappropriate or gratuitous details we identified are not likely to be considered potentially clinically relevant, even by an intern.

Overall, we found it helpful to consider granular details in the EHR, including where they are inserted, what purpose they serve, and where they might be missing. Electronic documentation prioritizes justifying clinical decisions, leaving patient reasoning largely undocumented except when it serves clinicians to note overt rejection of recommendations. Sometimes the same documentation would include extensive clinically unnecessary details in areas that could be seen as unflattering or embarrassing for the patient, while simultaneously excluding elaboration where further detail could be useful for bolstering patient credibility. For example, adding the patient's reasons for nonadherence to a prescribed medication, as in "not taking iron due to severe constipation," creates an opportunity to rescue the patient's character.

Finally, we discovered an emergent theme of judging patients-qua-mothers. Where the "good mother" is characterized by attentiveness, self-sacrifice, and virtuousness, the "bad mother," by contrast, is neglectful, selfish, and debauched (Geist & Bull, 2013). We identified language that

may effectively stereotype patients as "bad mothers," corresponding with themes where the patient was depicted as failing to act per medical recommendations, acting in self-interest at the expense of her fetus, or directly inflicting harm via exposure to substances, sexually transmitted infections, or associated flaws in character. Obstetrics may be uniquely prone to expressions of bias, as judgments on maternal fitness appear to compound all other forms of stigma that are likely to be replicated in other clinical contexts.

Sociological analyses have established the significant impact of cultural beliefs on decision-making for birth method, breastfeeding, and motherhood (Bryant et al., 2007; Marshall et al., 2007). Our work indicates that clinicians use language in prenatal records that assesses patient maternal fitness, existing against a backdrop of paternalistic treatment of pregnant women as objects which society has an interest in controlling. Social norms of a "perfect mom culture" are replicated within the clinical setting, wherein physician recommendations are viewed as well-informed, authoritative directives aligned with fetal best interests (Johnston & Swanson, 2003).

Language that posits deliberate acts "against medical advice" may prime for negative attitudes, potentially reducing nuanced pregnancy-related decisions to a dichotomy of safe/unsafe, order/disorder, or life/death (Bryant et al., 2007). Departure from these recommendations, regardless of the patient's reasons, assigns a cause for judgment that may be propagated across diverse clinicians, and potentially, the patient herself, throughout her prenatal care encounters.

Linguistic features emphasizing stigmatized sexual behavior or substance use may paint a picture of moral debauchedness unbefitting a mother, with implications for clinicians' view of the "appropriateness" of the current pregnancy, subsequent disposition of the child, as well as any future childbearing potential. If clinical training and practice lead to the unreflective use of power to enforce "good mother" behavior, it incurs epistemic injustice against those who cannot or do not desire to comply with clinical directives. In this context, obstetricians' ethical duty to their patients becomes secondary to their duty as stewards of pregnant peoples' bodies and behaviors vis-à-vis fetal interests. Implicit shaming and alienation of patients from their physicians are most likely to affect those who face the greatest barriers to accessing or adhering to prenatal care. It is most insidious when legal and medical authorities conspire to criminalize "bad mothers" and punishment may entail loss of custody or coerced contraception, as we have seen in the case of substance use disorders (Roberts, 1997).

Though an outlier, the note previously mentioned, concerning an attending physician with an HSV diagnosis, demonstrated relative restraint and discretion in documenting gynecological history for a person whose good moral character and maternal fitness were independently assured. By comparison, documentation patterns observed in the general patient population appeared to fixate on the stigmatized sexually transmitted infection history. While we cannot draw generalizable conclusions from this isolated case, it does suggest that authors may take special care, whether consciously or subconsciously, to avoid stigmatizing language in the documentation about patients who are deemed professional or even likely to read the notes. Further exploration of documentation written by physicians about other physicians may be a rich source of principles and heuristics that are informally adopted and internally used to highlight credibility and respect for the patient.

Limitations & future directions

This exploratory study randomly sampled H&P notes from 100 patients who gave birth in one of four hospitals in urban and suburban areas, generating a robust taxonomy of biased language unique to the obstetrical setting. While we achieved saturation in this context, the study is limited by a relatively small population from a single academic hospital system with no rural or community-based practice settings. All H&Ps contained attending comments. However, the primary authors for the preponderance of the narrative content were trainees. Exclusion of patients without two or more prenatal

notes may have excluded the most marginalized individuals, for whom lack of prenatal care likely potentiates biased documentation during childbirth admission (Baer et al., 2019).

Further research should expand the framework to account for linguistic features associated with positive attitudes and validate and refine the taxonomy among other patient, provider, and geographic locations as well as other settings, such as gynecology and pediatrics. For instance, while we found similar language used by midwives and physicians, further investigation is warranted as midwives were a minority in our sample. Marital status of patients and note authors alike may also provide valuable insight into maternal fitness judgements in future studies. The taxonomy may be applied to subsequent text-based analyses to explore the prevalence of biased language in medical records of patients with racial, educational, and medical stigma. A case-control review of maternal morbidity and mortality may be useful to explore if biased language, either as a reflection or instigator of stigma, is independently associated with adverse outcomes (Davis, 2019; Schencker, 2020; Villarosa, 2018).

Similar studies of biased language in EHRs extract and evaluate narrative text in a database context. To remain true to the clinicians' experience with medical documentation, the coders studied the selected notes directly within EPIC or in exported PDFs that maintained the structural aspects of the H&P template as it would appear to a reader during real-life use of the digital platform. This was a strength; however, it may have imparted additional biases that would not be evident in the standalone text by presenting the narrative content within the broader context of dashboards, problem lists, and potentially stigmatizing demographics, e.g., *"Works at: NOT EMPLOYED"* or Medicaid insurance status, which are always visible within the EHR window (Bennett et al., 2022). This analysis of free text considered how language in medical records resides within a user interface whose design is relevant to how patients are depicted. Further investigation is warranted into biases embedded within structural components of EHR software, and how they compare across different EHR designs.

Additionally, one of the coders previously worked as a supervising senior resident with most note authors, and thus had intimate knowledge of the respective clinical contexts as well as first-hand experiences with the authors' personal attributes, communication style, and bedside manner. To mitigate the impacts of this bias, the coder developed a strategy to avoid seeing the author's name until after reviewing and coding the entire narrative content. When the coders met to review, the coder without personal knowledge of the authors' personalities would lead the session to avoid priming. Once the note's authors were restored, stigmatizing language did not reliably conform to a priori expectations based on clinical interactions with that author. For example, one resident with a "warm" bedside manner and history of patient advocacy unexpectedly used stigmatizing language, whereas another with a "cold" persona and more transactional patient relations had remarkably neutral, unbiased language. More research, potentially leveraging ambient voice recognition software, is needed to understand how stigma is orally conveyed in clinical practice, and how resulting biases may be represented in medical documentation (Wesevich et al., 2023).

There was substantial intra-author consistency, with some authors much more likely to utilize stigmatizing language than others at their level of training (Himmelstein et al., 2022). Further investigation is needed to unpack these differences and to determine if specific training environments, modifiable factors, or demographic features may be correlated with the use of linguistic features that perpetuate bias. It would be valuable to longitudinally track individual note authors to assess changes in the amount of stigmatized language used while controlling for decreases in the total amount of text produced as they advance in training. Understanding how an intern's unreflective use of stigmatizing language may evolve into an attending's deep-seated bias will identify opportunities for effective interventions delivered during training and continuing medical education.

Educational reform will be critical. Medical school and residency curricula surrounding medical documentation must be revisited considering current EHR technologies, practices, and cultural

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contexts (Tarleton et al., 2023). In many cases, the use of direct or indirect patient quotes should be retired and copying and pasting of stigmatizing language minimized. Training must be expanded from a narrow focus on personal note writing to include broader stewardship of medical records, including consideration of how notes relate to one another as a corpus and taking ownership of the dutyto critically revise, and otherwise demonstrate thoughtful management of shared spaces within the EMR platform, e.g., by de-duplication of stigmatized diagnoses in the "Epic problem list".

One heuristic we are exploring in clinical education is teaching a mindful approach to documentation, endeavoring to depict patients as the protagonists in their own narratives. As always, we invoke the golden rule—document about others as you would have them document about you.

Recent developments with the 21st Century Cures Act requirement to implement "open notes" have been touted as an important strategy for ameliorating biased language in medical records (Bell et al., 2017). Enabling patients to read their medical notes more easily may help disincentivize the most egregious, explicit biases, though a substantial proportion of EHR content remains out of view (Hamze et al., 2023). Ultimately, granting patients read-only access to select notes is insufficient to address the more pervasive and deeply embedded implicit biases coded in the structure and jargon of medical documentation, software interfaces, and prevailing oral tradition. By nature, these biases are hidden in plain sight, deploying facts, direct quotes, and specific phrasing to subtly discredit and disparage patients in a seemingly acceptable manner. Importantly, if patients do not like how they are portrayed, recourse is limited. Just as unique affordances and constraints of EHR platforms impact the encoding and dissemination of bias in medical records, our interventions must look to improve design and function of EHR technologies themselves (Vela et al., 2022).

Additional work is ongoing to train Natural Language Processing software to help identify such language within narrative components of the medical record (Sun et al., 2022). Moving forward, Large Language Models may be developed to suggest unbiased substitutions within EHR user interfaces, retroactively revise legacy text, or prompt other implicit bias interventions in real time. We advocate for attention to note template design, as well as dashboards, problem lists, and related platform features that may escape evaluation and reform with an approach that focuses exclusively on narrative-free text. A cohesive framework for identifying biased language in medical documentation is crucial for evaluating whether proliferating chatbots and generative AI tools (such as Abridge) perpetuate or combat historical biases affecting healthcare.

Conclusions

Our analysis of biased language in obstetrical records found sentences engineered to discredit women's testimony, indiscretions that compromised privacy without conferring clinical benefits, and labeling of women as "bad mothers." Stigmatizing language in the EHR may be the tip of the iceberg—a biomarker signaling a complex, evolving culture of testimonial injustice with material impacts on clinical experiences and outcomes. This work highlights the influence of pervasive social belief systems in obstetrical documentation, supporting further investigation of sociological currents that underlie disparities in maternal morbidity and mortality. Further research is needed in order to expand and validate this ethical framework. The taxonomy advanced here has the potential to inform novel approaches to medical education, develop next-generation technologies for detecting and intercepting stigmatizing language in medical documentation, and eliminate embedded biases from EHR platforms.

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