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Understanding disparities in person-centred maternity care: the potential role of provider implicit and explicit bias

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Abstract

Studies in low-resource settings have highlighted disparities in person-centred maternity care (PCMC)—respectful and responsive care during childbirth—based on women's socioeconomic status (SES) and other characteristics. Yet few studies have explored factors that may underlie these disparities. In this study, we examined implicit and explicit SES bias in providers' perceptions of women's expectations and behaviours, as well as providers' general views regarding factors influencing differential treatment of women. We conducted a convergent mixed-methods study with 101 maternity providers in western Kenya. Implicit SES bias was measured using an adaptation of the Implicit Association Test (IAT) and explicit SES bias assessed using situationally specific vignettes. Qualitative data provided additional details on the factors contributing to disparities. Results provide evidence for the presence of both implicit and explicit bias related to SES that might influence PCMC. Differential treatment was linked to women's appearance, providers' perceptions of women's attitudes, assumptions about who is more likely to understand or be cooperative, women's ability to advocate for themselves or hold providers accountable, ability to pay for services in a timely manner, as well as situational factors related to stress and burnout. These factors interact in complex ways to produce PCMC disparities, and providing better care to certain groups does not necessarily indicate preference for those groups or a desire to provide better care to them. The findings imply the need for multilevel approaches to addressing disparities in maternity care. This should include provider training on PCMC and their biases, advocacy for women of low SES, accountability mechanisms, and structural and policy changes within health care settings.

Keywords: Person-centred maternity care, disparities, implicit bias, explicit bias, maternity providers, Kenya, patient—provider interactions, quality of care, respectful maternity care, mistreatment

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KEY MESSAGES

- Providers have implicit and explicit biases based on women's SES that can influence provision of person-centred maternity care (PCMC).
- Providing better care for certain groups does not necessarily indicate preference for those groups.
- Differential care is produced by a complex interaction of multiple factors including women's appearance, providers' perceptions of women's attitudes, assumptions about who is more likely to understand or be cooperative, women's ability to advocate for themselves or hold providers accountable, ability to pay for services in a timely manner, as well as situational factors related to stress and burnout.
- Multilevel approaches are needed to address disparities in PCMC, including provider training on PCMC and their biases, advocacy for women of low SES, accountability mechanisms, and structural and policy changes within health care systems.

Introduction

Global maternal mortality remains unacceptably high. An estimated 295 000 women died from pregnancy-related causes in 2017—two-thirds in sub-Saharan Africa (SSA) alone (WHO *et al.*, 2019). A key factor perpetuating high maternal mortality in SSA is poor quality care, including poor PCMC (Miller *et al.*, 2016; Kruk *et al.*, 2018). PCMC refers to care during childbirth that is respectful and responsive to women's preferences, needs and values. It includes dignified and respectful care, effective communication, autonomy, and social and emotional support (Institute of Medicine, 2001; Afulani *et al.*, 2017a). PCMC is highlighted under 'experience of care' in the World Health Organization framework for quality of maternal and newborn health care (Tunçalp *et al.*, 2015; Afulani *et al.*, 2017a; WHO, 2018). Poor PCMC contributes directly and indirectly to poor maternal and neonatal outcomes (Miller *et al.*, 2016). In particular, many women shun giving birth in health facilities because of fear of poor PCMC manifested as mistreatment (Bohren *et al.*, 2014).

Despite the recognized importance of PCMC, a growing body of evidence has highlighted poor PCMC across the globe with documentation of poor communication, non-consented care, non-supportive care, and disrespectful and abusive care (Kruk *et al.*, 2014; Abuya *et al.*, 2015; Bohren *et al.*, 2015; Afulani *et al.*, 2019b). Such poor PCMC has been attributed to facility and health system factors such as poor managerial oversight, provider demotivation, lack of necessary equipment and supplies, lack of accountability mechanisms, as well as power asymmetry, institutional structures, and social and gender norms and inequality (Jewkes *et al.*, 1998; Freedman *et al.*, 2014; Sen *et al.*, 2018). These drivers of poor PCMC imply that within the same health system and sociocultural context, everyone would receive similar levels of PCMC. Disparities in PCMC, however, exist within the same context (Afulani *et al.*, 2018; Bohren *et al.*, 2019; Montagu *et al.*, 2019).

In particular, several studies in low-resource settings have highlighted disparities in PCMC based on women's socioeconomic status (SES). In Kenya, Ghana, and India poor women, those with low education, and those who were unemployed received the poorest PCMC (Afulani *et al.*, 2019a). Similarly, women report experiencing discrimination based on their SES (Afulani *et al.*, 2017b; Smith *et al.*, 2020). Studies on drivers of poor PCMC suggest providers treat women differently based on women's appearance, assumptions of women's expectations and level of understanding, and women's ability to advocate for themselves (Afulani *et al.*, 2020a,b; Smith *et al.*, 2020). Others have highlighted the role of women's ability to pay for services including bribes (Warren *et al.*, 2017; Landrian *et al.*, 2020). However, understanding disparities was not the primary goal of these studies, and its drivers were not explored in

detail. Thus, understanding drivers of disparities in PCMC remains a critical area of investigation. In this paper, we explore the potential contribution of providers' implicit and explicit SES biases to PCMC disparities in Kenya. Our focus is motivated by prior work with health care providers in this context (Afulani *et al.*, 2020a,b), and draws on the broader global literature on sources of disparities in quality of care.

Bias within a social context is the negative or positive evaluation of one group relative to another and can be implicit/unconscious or explicit/conscious (Blair *et al.*, 2011). Implicit bias operates at an unintentional level and does not require a person to endorse the belief or devote attention to its expression. Instead, it is activated quickly and unknowingly by situational cues such as a person's skin colour, accent, clothing or other factors (Blair *et al.*, 2011; Mendes and Koslov, 2013). In the USA, where racial bias has been extensively studied, anti-Black bias among physicians is associated with disparities in quality care, including lower likelihood of evidence-based prescribing, withholding pain medication, and lower quality interpersonal care for Black compared with White patients (Green *et al.*, 2007; Cooper *et al.*, 2012; Sabin and Greenwald, 2012). Implicit SES bias in medical settings has been described to a less degree (Haider *et al.*, 2015a,b).

Explicit bias, on the other hand, refers to conscious attitudes and beliefs individuals hold about a group (Daumeyer *et al.*, 2019). Explicit bias can manifest as discrimination due to perceptions people hold about certain groups. Research shows that provider perceptions of patients based on SES and race influences treatment recommendations (van Ryn *et al.*, 2006). Such biases include perceiving African-Americans and low SES groups more negatively on issues such as intelligence, risk behaviour and adherence, and feeling less connected to them (van Ryn and Burke, 2000). While studies on bias in PCMC in Africa are limited, there is evidence of discrimination in healthcare settings based on SES with some evidence of both implicit bias and explicit bias (Andersen, 2004; Afulani *et al.*, 2020b).

The way people are treated in healthcare settings is a reflection of broader societal norms and behaviours (Filby *et al.*, 2016), and disrespect thrives where it is tolerated, with individual biases reinforcing patterns of abuse (Leape *et al.*, 2012a,b). Thus, in societies where differential treatment based on SES is normative—and providers are typically higher on the social hierarchy than patients—providers may unconsciously treat poor women with disrespect. Providers might be more conscious of their actions when they encounter people they perceive as having higher social standing, causing them to treat such patients with greater respect (Afulani *et al.*, 2020b). Also, perceptions that women of low SES have lower expectations and will not hold them accountable for poor care may

lead them to treat such women poorly (Afulani *et al.*, 2020a). Therefore, we hypothesized that providers' implicit and explicit biases based on women's SES contribute to PMC disparities.

The study aims are to examine: (1) provider implicit and explicit SES biases related to PCMC; (2) provider-level factors associated with implicit and explicit SES biases; and (3) provider general perceptions of factors that contribute to differential PCMC. We employed a convergent mixed-methods design and integrated quantitative and qualitative findings to extend understanding of potential factors underlying disparities in PCMC.

Methods

The study involved maternity providers in a rural county in western Kenya. The county is described in detail elsewhere (Afulani *et al.*, 2018). It has eight sub-counties, each of which has a sub-county hospital. There is also one county referral hospital and several health centres and faith-based and private health facilities. There are 32 nurses, 19 clinical officers and 4 doctors per 100 000 people in the county (HPP, 2015). The county population is ∼1 million, with an estimated 40 000 births annually (MCD, 2016). The estimated maternal mortality ratio is high at 673 deaths per 100 000 live births compared with 495/100 000 nationally. Based on the most recent national survey, 53% of births in the county occurred in health facilities, compared with the national average of 61% (Kenya National Bureau of Statistics *et al.*, 2015).

Data were collected through surveys with 101 maternity providers, followed by in-depth interviews with a subset of 31 providers from June to September 2019. Providers were purposively recruited based on position type from 30 health facilities with the highest birth volumes. Facilities included the county hospital, all sub-county hospitals and two to three other facilities in each sub-county. In each facility, the goal was to recruit one or two clinical officers (where applicable), two to five nurses and midwives (depending on number available), and one or two support staff (ward aides and cleaners). Support staff were included because they play a key role in PCMC provision in this setting (Golub *et al.*, 2020). The study was approved by the County Health Directorate and introduced to facility heads, who facilitated recruitment. Two bachelors-prepared female Kenyan staff (second and third authors) conducted both the surveys and interviews in English, Swahili or Luo in private locations at the facility.

A structured questionnaire was used for the survey, which lasted 40 – 60 min. The survey included measures of explicit bias and perceptions of sources of differential care (Box 1) and provider and facility characteristics (Table 1). Data were entered directly into the REDCap mobile application (Harris *et al.*, 2009). Each respondent also took a computer-based implicit bias test described in Box 2. Between three and five providers participated in the surveys in most facilities, which represented all providers available on the day of the interview and included zero to two clinical officers (except for the county referral hospital that included three clinical officers and one doctor), one to five nurses and zero to two support staff per facility.

Subsequently, interviews were scheduled with providers who agreed to be re-contacted for the follow-up interview, purposively targeting one or two from each facility, including at least one clinical provider. The interviews followed an open-ended interview guide and lasted 30 – 60 min. Interviews were audio-recorded and transcribed with simultaneous translation where necessary (Supplementary Appendix S1—COREQ checklist). Each provider was given information about the different aspects of the study and

informed written consent obtained. Participants received 300KES (∼\$3) following the survey and interview.

Data analysis
Quantitative analysis
We first used descriptive statistics to characterize the measures. We then used mixed-model ANOVA to assess if responses based on the two SES vignettes differed. Associations between bias measures and provider and facility characteristics were examined using cross tabulations and linear regressions with robust standard errors. We examined conditional effects by including interaction terms for IAT score and providers' position, gender and perceived social status. We used STATA version 15.

Qualitative analysis
We followed Braun and Clarke's (2006) guidelines for thematic analysis. The first three authors coded the transcripts using deductive codes developed from the interview guide. Inductive codes generated from the data were added during coding. Few new codes were identified after coding half the transcripts. We wrote analytic and reflexive memos and discussed new codes and emerging ideas to come to consensus. After coding, we reviewed coded text and identified themes, wrote extended memos, and selected representative quotes to illustrate the range of voices. We considered both semantic and latent meanings of text and focussed on salience rather than frequency in the qualitative analysis (Braun and Clarke, 2006). We used Dedoose version 8.3.19.

Integration
A key strength of mixed-methods is the integration of quantitative and qualitative approaches for a better understanding of issues (Creswell, 2014). We achieved integration in the following ways. At the design stage we used a convergent mixed-methods design, with quantitative and qualitative data collection in the same period. Based on our prior work, we developed an interview guide to illustrate, expand and explain the survey findings. Integration also occured in the methods through connecting the samples (interview respondents drawn from survey respondent), and at the interpretation and reporting level through joint displays and integrating the results in the narrative where applicable (Fetters *et al.*, 2013).

Results

Of the 101 survey respondents, 43 worked in public hospitals, 44 in health centres and 14 in private/mission facilities. Sixty-two were nurses/midwives, 16 doctors/clinical officers and 23 support staff. Two-thirds were female with an average age of 34 years (Table 1).

Extent of implicit and explicit SES bias
Eighty-one providers took the IAT test, as some providers (especially support staff) could not use a computer or could not read. IAT scores ranged from −0.51 to 1.44, with a mean of 0.64 (SD = 0.47; 95% CI = 0.54 − 0.74). The positive score indicates a significant bias in favour of associating positive characteristics with high SES women and negative characteristics with low SES women. The average explicit bias score was 15.8 (SD = 2.6; range 9 − 22) for the low SES woman vignette and 15.9 (SD = 2.8; range 7 − 23) for the high SES woman vignette. Scores did not differ significantly by order of vignette presentation. Mixed-model ANOVA showed no significant difference between the two summative scores ($P = 0.79$), suggesting a lack of explicit SES bias based on the summative measure.

Box 1 SES and explicit bias measures

Socioeconomic status refers to the social rank of an individual and her family, including economic status usually measured by income and/or wealth and social status typically determined by education and/or occupation (Adler *et al.*, 1994). In this study, we use SES to refer to descriptions related to women's education, occupation, empowerment and personal or family wealth or status, which have been found in prior studies to be predictors of PCMC (Afulani *et al.*, 2019b; Montagu *et al.*, 2019).

Explicit bias was assessed using providers' perceptions of women's PCMC expectations and behaviours based on SES, preference for low and high SES women and a feeling of connection to low- and high-SES women. The two vignettes below were read in counter-balanced order to each provider, followed by ten questions.

Woman with markers of low SES: A 30-year-old poor farmer from one of the villages in the county is admitted to the ward. She dropped out of school in primary two and cannot read or write. She is not covered by insurance and attended ANC only once. She looks very unkempt and did not bring anything with her to be used for the delivery. She presented in labour with her mother-in-law and is complaining of severe abdominal pain. Thinking about this patient: How strongly do you agree/disagree with these statements?

Woman with markers of high SES: A 30-year-old woman who is the wife of a doctor in the hospital is admitted to your ward. She also works at the local bank and is covered by private health insurance. She received ANC six times during her pregnancy. She is very well dressed and has come with all the required items for her labour. She presented in labour with her mother-in-law and is complaining of severe abdominal pain. Thinking about this patient: How strongly do you agree/ disagree with these statements?

The first eight questions assessed providers' perceptions of the woman in the vignette's expectations for introductions, consenting and companionship; potential to cooperate, understand explanations, exaggerate pain and to litigate; as well as provider behaviour needed to convey seriousness and gain cooperation. Response options ranged from strongly disagree to strongly agree on a 4-point scale (Figure 1). Two final questions asked providers to what extent they would want to be a provider for the woman in the vignette and how connected they felt to her on a scale of $1-10$. The vignettes and questions were informed by measurement of explicit bias in prior literature (Green *et al.*, 2007; Haider *et al.*, 2015b) and prior research in this setting (Afulani *et al.*, 2020b). We incorporated feedback on the vignette and suggestions raised by various health care providers and researchers. The final version was piloted with five providers in the target population prior to the study. We conducted exploratory factor analysis to assess if the eight PCMC perceptions questions could be combined to create a composite measure (Afifi *et al.*, 2004).This yielded one factor with Eigenvalue >1, with factor loadings of >0.3 for all items except the question on litigation. The question on 'introductions' had low loading for the low SES vignette only and the question regarding 'sternness' had low loading for the high SES vignette only. Dropping these two questions did not significantly improve the Cronbach's alpha, so these were retained based on their conceptual importance. Cronbach's alpha for the seven items was 0.71 for the low SES Vignette and 0.69 for the high SES vignette. We generated explicit bias scores by summing responses to the seven questions for each vignette for the 98 providers who responded to all 7 questions. This yields scores ranging from 4 to 28, with higher scores indicating more explicit bias.

Providers' general perceptions of factors contributing to disparities was assessed by this question: 'Thinking of your interactions with patients, based on what attributes are you likely to treat patients differently?' A similar question was asked in the in-depth interview, followed by open-ended prompts exploring the initial response.

There were some significant differences by vignette based on individual questions for expectations regarding introductions, understanding, exaggerating pain and litigation. However, the directionality of the associations was not consistent (Figure 1). Providers were more likely to agree that the low SES woman is not likely to expect providers to introduce themselves and is not likely to understand explanations, compared with the high SES woman. On the other hand, they were more likely to agree that the high SES woman is likely exaggerating her pain and is more likely to sue them if something goes wrong compared with the low SES woman. Other differences were not statistically significant, but important to note. In both vignettes, close to half agreed that since the woman has come to the facility, it means she has consented to all examinations and treatment (45% for low SES and 46% for high SES). There was further consensus that the provider needs to be stern for women to understand the seriousness of the situation (59% for low SES and 61% for high SES), and about one-third agreed that women are likely to be uncooperative when it is time to push and will need to be physically restrained (34% for low SES and 37% for high SES).

The divergence in the results from the IAT and the summative and individual explicit bias measures can be partly explained by the qualitative data in which providers' perceptions of women based on their SES were not always consistent. Providers reported high-status women had higher expectations of care (which might explain perceptions regarding introductions), and more educated women more likely to understand information provided, and so more likely to be cooperative. But they also perceived educated women to be less trustful of information from providers, and more likely to challenge their decisions.

> As in someone who is well educated tends to cooperate well ... but again it is a two-way traffic, like you can find [one] not educated, but able to cooperate. But ... the one who is more educated is more inquisitive and there are some doctors whom when asked many questions they get irritated. So in terms of knowledge and education, it is a factor that affects how you attend to a patient (CP2011).[1]

Additionally, providers reported assumptions that high SES women were usually seeking special care (which might explain

Table 1 Participant's characteristics

	Survey (N = 101)		IDI (N = 31)	
	No.	%	No.	%
Facility type				
Public hospital	43	42.6	18	58.1
Public health centre/dispensary	44	43.6	9	29
Mission/private hospital	14	13.9	4	12.9
Position				
Nurse/midwife	62	61.4	18	58.1
Clinical officer/doctor	16	15.8	3	9.7
Support staff	23	22.8	10	32.3
Years as provider				
0 − 5 years	50	49.5	15	48.4
6 − 10 years	38	37.6	11	35.5
More than 10 years	13	12.9	5	16.1
Gender				
Male	38	37.6	10	32.3
Female	63	62.4	21	67.7
Age				
23 − 29 years	32	31.7	10	32.3
30 − 39 years	49	48.5	14	45.2
40 − 52 years	20	19.8	7	22.6
Marital status				
Married	75	74.3	23	74.2
All single	26	25.7	8	25.8
Number of children[a]				
No children	22	22	6	19.4
1 − 3	56	56	15	48.4
4 − 7	22	22	10	32.3
Education level				
Less than college	18	17.8	9	29
College and above	83	82.2	22	71
Monthly salary[b]				
Less than 10 000 KSh	20	20.2	9	29
10 000 to <50 000 KSh	40	40.4	11	35.5
50 000 KSh or more	39	39.4	11	35.5
Perceived social status of family growing up				
Bottom half	85	84.2	28	90.3
Upper half	16	15.8	3	9.7
Perceived social status of self now				
Bottom half	57	56.4	19	61.3
Upper half	44	43.6	12	38.7
Social mobility				
Upward mobility	71	70.3	22	71
No change	17	16.8	2	6.5
Downward mobility	13	12.9	7	22.6
Religion				
Seventh Day Adventist	49	48.5	18	58.1
Catholic/Methodist/Presby/Anglican	23	22.8	4	12.9
Methodist/Presby/Anglican/Other	29	28.7	9	29
Training on interpersonal interactions				
No	80	80	29	93.5
Yes	20	20	2	6.5

All totals equal to 101 except those marked a and b which have missing data with total of 100 and 99, respectively. Support staff include 7 ward aids, 14, cleaners, 1 technician and 1 pharmacist.

KSh, Kenyan Shillings.

perceptions about them exaggerating pain), and these expectations made it difficult to please them. As one provider said: 'they believe that they are really rich so they have attitude and they are expecting special treatment…so as much as you try to explain that everyone is equal here they don't want to listen to you'. It was thus easier to please the poorer women who did whatever they were told and were less likely to complain about their care.

Those who are poor are easier to attend to because even if you tell them anything, they get satisfied and follow instructions, but the rich people don't appreciate. Even if you give them drugs they still complain that you did not serve them well (SS2131).

There were no significant differences in providers expressed preferences and feeling of connection to the two women in the vignettes:

Box 2 Implicit bias measure

Implicit bias operates at an unconscious level, thus requires indirect methods to quantify it. The *Implicit Association Test (IAT)* is a cognitive-behavioural test that measures the strength of automatic associations between concepts in people's minds based on a sorting task (Greenwald *et al.*, 1998). It has been used to measure implicit bias based on race, SES, gender and other factors and shown to be valid and reliable (Nosek *et al.*, 2007a). The IAT has been used to examine racial and SES biases related to medical outcomes in the USA (Green *et al.*, 2007; Haider *et al.*, 2015a). No study has, however, applied it to PCMC (or to health care in Africa). Thus, to assess implicit SES bias that may contribute to PCMC disparities in Kenya, we created an IAT to measure associations between women's SES characteristics and providers' perceptions of women as 'difficult' or 'good'—informed by prior work in Kenya, where providers frequently mentioned women being 'difficult' as a reason for mistreatment (Afulani *et al.*, 2020b). Patients who are medically or interpersonally challenging are often described as 'difficult', whereas patients who make providers' jobs easy are considered 'good' (Adams and Murray, 1998). Attributes of 'good' patients included likable, cooperative, respectful, intelligent and responsible; while attributes of 'difficult' patients were irresponsible, uncooperative, rude, annoying and stupid. High SES descriptors were: wealthy, well-educated, well-dressed and a Banker; low SES descriptors included poor, uneducated, old/torn clothes and a Cleaner. The programming script was based on a generic IAT template implemented in Inquisit Lab version 5. The IAT was developed with the help of a psychologist (W.M.) with experience developing IATs, and tested with various health care providers and researchers. The final version was piloted with five providers in the target population prior to the study. An individual's IAT score represents the difference in the average length of time they took to sort words during various sections of the test. It is assumed that people will more quickly sort words they associate together than those they do not. IAT scores vary between −2 and +2. In this study, a positive score indicates a stronger association between high status with good patient and between low status with difficult patient; a negative score indicates a stronger association between high status with difficult patient and low status good patient. We used dependent samples *t*-test to test whether the average IAT score differed significantly from zero—zero indicating no bias.

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69 and 61%, respectively, reported they would very much want to be a provider for the low and high SES woman and the average connection score towards both women was 7 (range of 0 − 10, where 10 is the strongest connection). This lack of preference for specific women was consistent with the qualitative findings, where providers reported everyone is important and should be treated the same. As one provider noted:

> I took an oath to serve all clients in all corners of the world and Kenya and so there are no certain type of clients to be served different (CP1142).

The few who acknowledged preferring women of certain demographics did so because they held certain perceptions about their attitudes and behaviours. Providers preferred patients thought to be humble, understanding, cooperative, and compliant.

> You can prefer to help particular type of a patient, someone [who comes] very humbly requesting you to help them... (SS1232).

Factors associated with explicit and implicit bias

Few provider demographic variables were significantly associated with the explicit bias scores (Table 2). On the high SES vignette, clinical officers had a score of 13.9 compared with 15.9 for nurses/midwives and 17 for support staff, suggesting that, on average, clinical officers had less explicit bias towards the high SES woman. But this was not significant for the low SES vignette. Also, providers with higher education (college degree) and income (>10 000 KSh) had lower scores on the high SES vignette than those with lower education and income, respectively.

There were no statistically significant associations between any of the demographic variables and the IAT score and between the IAT score and vignette scores in both bivariate and multivariate regressions (Supplementary Appendix S2). In multivariate analysis, only the difference in position was statistically significant, with clinical officers having a lower score on the high SES vignette than

nurses and midwives (Coeff. = −2.46; CI: −4.60 to −0.32). The interactions between IAT score and provider position, gender and perceived social status were not significant. None of the associations were significant when the difference in the scores for the two vignettes was used as the predictor.

Sources of disparities

Despite the general lack of preference for specific types of patients, providers identified several factors that led to differential care in both the survey and interviews. The most common factor mentioned was the attitude of women or their families. Providers reported that when women were humble, cooperative and followed instructions, they were more likely to be treated well. Providers got angry and frustrated when women were rude or disrespectful to them or did not follow their instructions, which affected how they were treated.

> ... some of them have attitude; it is inborn and you cannot even correct it ... mostly attitude is what affect the relationship to attend to patients (CP2022).

Women's social status, level of education and economic status, were also commonly mentioned, which together make SES the most commonly mentioned source of differential care. Other sources of differential care included women's medical condition (mostly related to urgency), age, parity, ethnicity, language, religion and language barriers (joint display of quantitative and qualitative data on sources of disparities in Table 3).

Providers perceptions of women's backgrounds interacted with other factors in several ways to influence how they were treated. These factors could be considered as sources of explicit bias because providers were aware of them. However, such perceptions can become so ingrained that they may be activated unconsciously. As one provider noted: '... it can be that you have done it consciously or unconsciously but it does contribute because when you know somebody who is economically stable in the community, she can be treated differently compared with
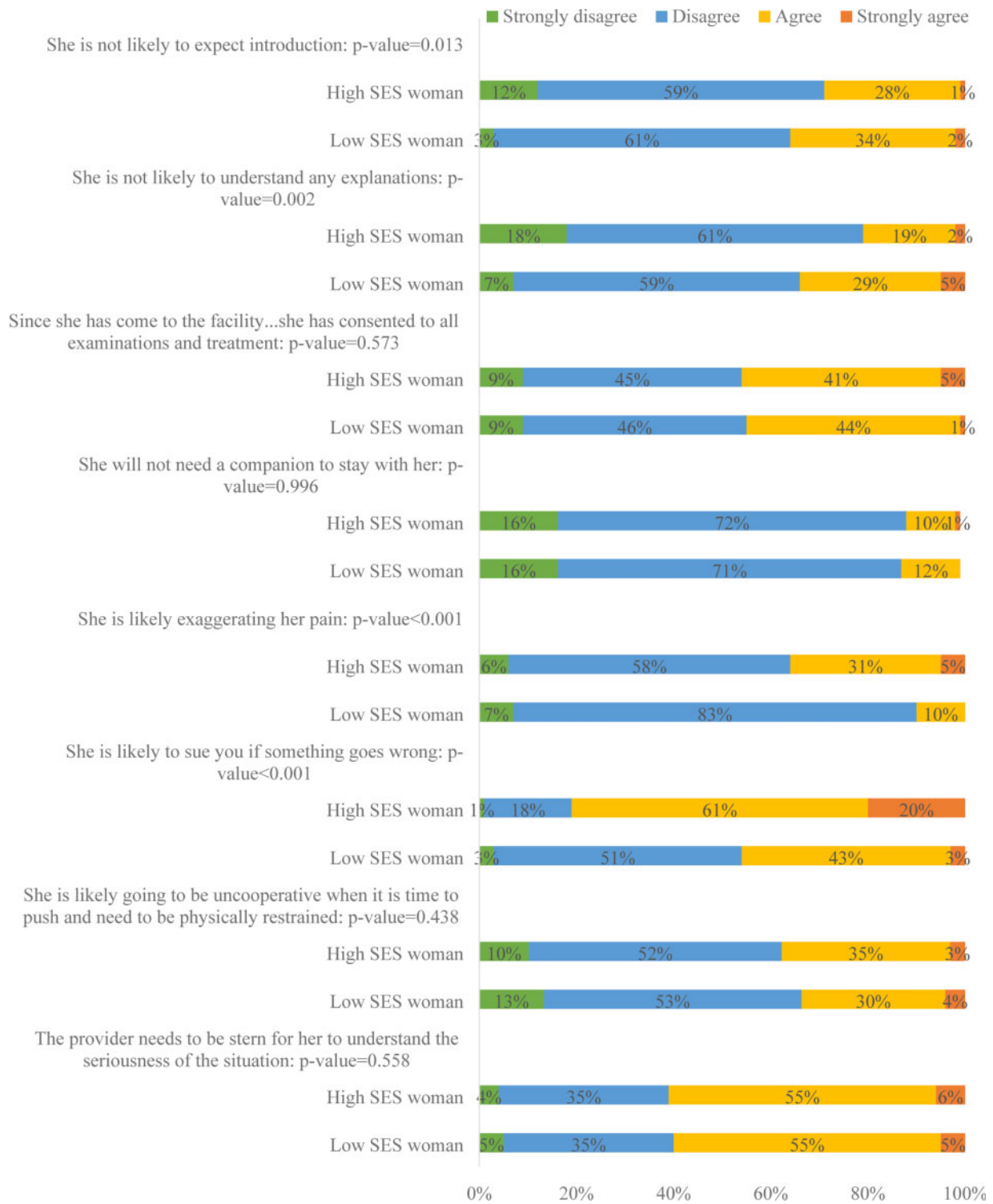
Figure 1 Providers' perceptions of women's PCMC expectations by women's SES based on vignettes, *N* = 100.

someone poor…' The factors below are thus potential sources of both implicit and explicit bias that may underlie PCMC disparities.

Attraction based on women's appearance

Providers acknowledged that when women appeared well dressed and clean, they were treated better than those who were dirty and unkempt. As one provider noted: 'Maybe the one who is dirty and carelessly dressed, you will just look at her unlike the one who is well kept, clean

and well dressed …even if you don't know her but she is well dressed, then you will treat her well. Mostly you will find yourself not treating them equally. You will see the clean one to be special than the other one'. Providers also acknowledged judging women based on their appearance, without knowing what has contributed to their situation. Even how the baby was dressed contributed to differential treatment.

> … *it all depends on how the patient presents themselves, for example when you go to the hospital, you will find when a mother*

Table 2 Explicit and implicit bias scores by provider characteristics

	Score on low SES woman vignette (N = 98)				Score on high SES woman vignette (N = 98)				IAT score (N = 81)			
	N	Mean	SD	P-value	N	Mean	SD	P-value	N	Mean	SD	P-value
Total	98	15.8	2.6		98	15.9	2.8		81	0.6	0.5	
Facility type				0.652				0.156				0.531
Govt. hospital	42	15.8	2.5		42	16.1	2.7		30	0.7	0.5	
Govt. health centre	42	16.0	2.5		42	16.1	2.3		38	0.6	0.4	
Mission/private hospital	14	15.3	3.1		14	14.6	3.8		13	0.5	0.5	
Position				0.219				0.002				0.591
Nurse/midwife	60	15.7	2.6		60	15.9	2.5		57	0.6	0.5	
Clinical officer/doctor	15	15.1	3.5		15	13.9	3.8		11	0.7	0.5	
Support staff	23	16.5	1.8		23	17.0	2.0		13	0.7	0.4	
Years as provider (year)				0.608				0.806				0.793
0 – 5	50	16.0	2.6		50	15.9	3.1		38	0.6	0.5	
6 – 10	35	15.7	2.6		35	15.7	2.2		33	0.7	0.4	
More than 10	13	15.2	2.6		13	16.3	2.9		10	0.7	0.6	
Gender				0.551				0.883				0.905
Male	36	15.6	2.6		36	15.8	3.3		33	0.7	0.5	
Female	62	15.9	2.6		62	15.9	2.4		48	0.6	0.4	
Age (year)				0.808				0.424				0.493
23 – 29	31	15.8	2.7		31	15.4	3.0		27	0.6	0.5	
30 – 39	47	15.7	2.9		47	16.1	2.9		41	0.7	0.4	
40 – 52	20	16.1	1.7		20	16.2	1.9		13	0.7	0.5	
Marital status				0.114				0.249				0.109
Married	73	15.6	2.6		73	15.7	2.8		62	0.7	0.4	
All single	25	16.5	2.4		25	16.4	2.7		19	0.5	0.6	
Number of children[a]				0.031				0.061				0.327
No children	22	16.6	2.6		22	16.3	2.7		17	0.5	0.6	
1 – 3	53	15.2	2.8		53	15.3	3.0		51	0.7	0.4	
4 – 7	22	16.5	1.7		22	16.8	1.9		13	0.7	0.5	
Education level				0.149				0.013				0.559
Less than college	18	16.6	1.8		18	17.3	1.9		8	0.7	0.5	
College and above	80	15.6	2.7		80	15.6	2.8		73	0.6	0.5	
Monthly salary[b]				0.107				0.049				0.239
<10 000 KSh	20	16.9	1.8		20	17.2	1.9		8	0.8	0.5	
10 000 to <50 000 KSh	38	15.6	3.0		38	15.7	3.3		38	0.6	0.4	
50 000 KSh or more	38	15.5	2.4		38	15.5	2.3		33	0.7	0.5	
Perceived social status of family growing up				0.184				0.062				0.543
Bottom half	83	16.0	2.6		83	16.1	2.6		69	0.7	0.4	
Upper half	15	15.0	2.2		15	14.7	3.2		12	0.6	0.6	
Perceived social status of self now				0.221				0.050				0.092
Bottom half	57	16.1	2.3		57	16.4	2.8		43	0.6	0.4	
Upper half	41	15.4	2.9		41	15.2	2.6		38	0.7	0.5	
Religion				0.339				0.600				0.299
Seventh day adventist	48	16.2	2.6		48	16.2	2.6		39	0.6	0.5	
Catholic/Methodist/Presby/Anglican	23	15.5	2.3		23	15.7	2.5		19	0.8	0.4	
Methodist/Presby/Anglican/Other	27	15.4	2.8		27	15.5	3.2		23	0.7	0.5	
Training interpersonal interactions with patients[a]				0.766				0.719				0.294
No	79	15.8	2.4		79	15.8	2.8		63	0.6	0.5	
Yes	18	16.0	3.3		18	16.1	2.5		17	0.7	0.5	
Started on low SES woman scenario				0.842				0.256				0.270
No	41	15.9	3.0		41	15.5	2.9		33	0.6	0.5	
Yes	57	15.8	2.3		57	16.2	2.7		48	0.7	0.4	

[a]All totals equal to 101 except those marked.
[b]Which have missing data with total of 100 and 99, respectively.

has dressed her baby so well and the baby looks beautiful even if you are the nurse who is attending to them, you will find yourself playing with the baby, you even want to carry the baby. But when the other mother comes with her baby who is not well taken care of, you will just attend to her but nothing will attract you to the baby. So it all depends with the cleanliness of the mother (SS2061).

Assumptions about who is knowledgeable, more likely to understand and be cooperative

Providers perceived more educated women as having better understanding, hence being easier to deal with, while uneducated women from the village were assumed to lack understanding.

Table 3 Factors contributing to disparities in person-centred maternity care

Source of disparity[a]	N[b]	Illustrative quotation from in-depth interview
Attitude of women or their family	32	*Maybe the attitude of the client, maybe the client whom you are seeing as poor maybe has a good attitude compared with the rich client who pretends to know everything. (CP1181).* *There are patients who at times are rude while others are humble so in most cases, they normally tend to see that the humble one is treated well (SS1211).*
Difference in opinion or lack of cooperation	13	*Number one is cooperation, if that patient is cooperating then you can do everything. maybe examination is very cooperative aa....examination cooperative maybe giving information cooperative yes so that one makes the management (CP2111).* *Yes, there are some who do not cooperate at all, you can try your best talking, shouting for help but still nothing so you let God to take control. Like you tell a mother to go and bath or even eat so that you get the energy for pushing the baby but she is just looking at you quiet or maybe she will tell you that I don't have soap so I can't bath, even after giving her soap she will still tell you that she is tired so I just leave them and do something else (SS1102).*
Their social status or position in society	22	*Maybe social class, sometimes you like this woman works in a bank, so when she comes you would like to treat her with class unlike this mother who is washing for people their clothes, you know. Maybe such social class (CP1181).* *somebody is an MCA she will want to be served first. Position of a person can bring this differential treatment (CP1121).*
Their level of education or literacy	17	*The same to level of education, somebody whose level of education is high is easier to deal with and give information because the understanding is good compared with those who are not educated (CP2010).* *On the knowledge wise maybe in terms of education, it can make you move fast when managing a patient. As in someone who is well educated tend to cooperate well rather than that person but again it is a two-way traffic like you can find that am not educated but am able to cooperate but on the other end the other one who is more educated is more inquisitive and there are some doctors whom when asked many questions they get irritated so in terms of knowledge and education, it is a factor that affects how you attend to a patient (CP2011).*
Their economic status (wealth or lack of money)	15	*Also money, maybe someone has come to the facility and she has money, she will just say that doctor take care of that patient of mine, anything that you will tell me I will cooperate, so what they mean there is just go ahead and take care of the patient as anything that you will ask from me I will provide, so that person will be attended to in a well manner, or maybe a mother who is working at the county offices or in a bank, she will find mothers queuing at the maternity but her she will go direct to the nurses and be attended to because she is going back to the office while others are waiting miserably (SS1111).* *Another one is maybe financial, so you find some client may be they want some test or maybe they want some but there ....financial limitation they don't have enough money so that one becomes another limitation, you want to do a test him or her .... but that one becomes impossible (CP1211).*
Their connections (or lack of connections) to you or with the facility	15	*In most cases you can find that some patients are attended to according to their social class. Maybe she is the daughter of a big person or she is the wife to one of the officers around so you know, this really makes them to be handled differently... (SS2211).* *You may find, like she has money, or she is your family member or even your neighbour so obviously I will begin with her compared with those who are on que and yet I do not know them (SS1102).*
Their Occupation	4	*...Maybe a mother who is working at the county offices or in a bank, she will find mothers queuing at the maternity but her she will go direct to the nurses and be attended to because she is going back to the office while others are waiting miserably (SS1111).*
Complications or the outcome of their pregnancy	21	*But for us here patient same, first come first serve unless you are critically ill if it is MCH you come first you get the service first because I take the cards and the numbers but when you came late you also get home late, here we treat the equally for sure (CP1112).* *yeah, there are something like you may come, you are the first and another one comes with more serious and it may appear as an emergency so I will request you, though to look the one who was more sick or is almost in 2nd stage, almost delivering. The mother is pushing and the initial one was not pushing a baby, so you will request her to wait and assist the other (CP21O2)*
Their age, parity, or marital status	14	*Disparity age of the mother..., a mother who is under 15 years there is away you treat her compared with a mother who is 30 years and had have several deliveries at least they have experience in labour but a prime who is underage you need to talk to them a lot so that can make you treat them differently (CP2010).* *I also don't like the very old clients....You see the free maternity clients, most of them are people who have been doing deliveries at traditional birth attendants, and they sit in there one positions, they tell you what they want. I know we need to work with what the client is comfortable with but what we do here is for the client to lie on the couch (CP1172)* *...another thing is age.... there those young clients, especially young mother or young couples for that matter somebody will come with spouse and since they are still very young they really feel things should be done their way forgetting that this is hospital and this is a health issue that got procedures to be followed so the age also affect how you handle them (CP1221).*

Table 3 (continued)

Source of disparity[a]	N[b]	Illustrative quotation from in-depth interview
Their religion	7	*…another thing that affect is the religion, the religion we have around here there are some who are very weird and they will always stick to those beliefs however much it is not medicinal in any way so that again affect the information you give hers and she believe this is against her faith and she will listen to it but not implement that one again affect how she will survive in the process of life* (CP1222).
		Religion, you hear someone saying that we go with this lady to the same church so let me attend to her faster so that she can leave and not que (SS1111).
Their tribe/ethnicity	2	*tribalism also contributes like the nurse who is a kisii is the one on duty so when she sees a fellow Kisii come, they will begin to speak in there tribe and they will not speak in Kiswahili a language that everyone understands, She will then attend to her better than the way she was attending to other clients* (SS1111).
Stress	9[c]	*Workload, if you are busy with this patient and another one is calling you out there you know you will not attend to them well, at times there are delayed your salary then you come on duty, you know we have children then your children have been chased home you know you will carry that stress and if you are stressed you won't interact well but when you are okay you interact with them well* (CP1112).
		what can I say…I think it still revolves around the work load as you see you may be exhausted as you have done a lot of work so you will feel like somebody is so nagging or maybe bothering you but maybe it's because of the burn out….Some like I said, you are overwhelmed or you are fatigued that work load can also determine how you handle patients (CP2141).
Language barrier	2[c]	*…ok one is language barrier you find somebody who maybe is from another community is not getting Luo not getting Kiswahili not getting English and that one will make your communication not flowing* (CP1211).
		…like some here we get old women coming they don't know Kiswahili they don't know English, language barrier also affect how I interact with them and again … (CP1151).
Others	5[d]	Level of exposure, ANC attendance and hygiene, Mental health issues, Fatigue and delay in salary, Some give you soda

[a]Source of differential care include responses from both surveys and in-depth interviews structured.

[b]N refers to number of providers out of the 101 providers who mentioned this source in the survey.

[c]N from in-depth interviews as it was not included in options for survey.

[d]Mentioned by one person each in survey.

There are patients less likely to cooperate in the sense that some have good understanding; it depends with the environment where the client has come from. If a client is properly educated … the understanding level is good, but the one from village, understanding level is low and [they] take long to understand so will make them not cooperate well (CP1041).

These assumptions were also held based on age, parity and religion although not always in the same direction. For example, some providers mentioned that first-time mothers are less likely to understand instructions, hence more likely to be uncooperative because of their lack of experience. Others, however, mentioned that first-time mothers are more cooperative and follow instructions, whereas women with prior births assume they know everything, thus can be difficult to deal with.

the multi behave like they know because she has gone through it. But primi does not know [and] she will ask you now what should I do? Not all primi fear because it is first time, but if you find the one that cooperate, if you tell… her to do this she will do. But multi, not most of them, but some, really disturb (CP2022).

Responsibility for understanding, compliance and cooperation was mostly placed on the woman, and not the health care provider. Some providers acknowledged the providers' role in patient understanding, such as explaining what is being done to them. But, ultimately most blamed the woman for inability to obtain cooperation. Lack of cooperation from women resulted in anger and subsequent negative behaviours such as being verbally or physically abusive. These negative responses were attributed to fear of poor outcomes for which the provider would be blamed.

Before a client becomes uncooperative, you must have explained what you will do and how you will expect them to cooperate …. So If you explain … and they do not do what you explained, then

you become angry because the mother and…baby can die…and the relatives are on your neck… these usually result because of cooperation from the mother. So when you explain and they don't cooperate, it will force you to apply some pressure to cooperate because if you become too soft, the result will be poor (CP2010).

Expectations, ability to advocate for oneself and accountability

Women of higher SES were perceived as having higher expectations for care and able to command such care by virtue of their wealth. Additionally, providers acknowledged 'doing the right thing' when they perceived that the woman was knowledgeable. More educated women were perceived as 'knowing what is right', hence treated with more caution.

…because you know that this person knows…you want to try and do what is ideal. But when handling someone who doesn't know, you seem not to care, so it does contribute (CP2172).

Also, women who knew someone who could hold providers accountable for their care were said to be more likely to receive good care. Women of higher SES were perceived as more likely to have some connection with a significant person, such as a politician, someone who works in the county or some 'big man' in the community. Additionally, having a personal connection with the woman motivated providers to treat them better.

Another thing that affects is the background of these client and their relationship with the higher people around. Maybe she is…related to MP or somebody who works at the county… [and] will always feel that she is right and whatever she said is what is important…[but] what you are saying is not important to her and if you go against her wish then she feel like she can report you to somebody of higher authority (CP1222).

Ability to provide financially for their care

Finally, providers' assumptions about women's ability to provide all that was required for their care influenced timeliness of their care. Providers acknowledged more timely care of women who were able to bring or pay for supplies such as gloves and cotton wool for their care, than those who could not. Similarly, those who were able to readily pay for needed tests and medication received more timely care.

> *So there are sometimes you will find that this patient is a little well off financially…, so you can tell her to bring gloves and all that we need to help deliver the baby then she brings faster. But there is this other mother whom when you tell to bring the cotton wool, gloves…[and] you find that she is dragging herself like she does not have money, so you will find yourself attending first to the one who has all the things that you require to do your work* (SS1102).

Better care does not necessarily imply preference

There were complex interactions between factors that led to differential care. For example, preference for women more likely to understand was sometimes in conflict with preference for women who were cooperative, since high SES women viewed as more likely to understand, were also more likely to advocate for themselves, be less trustful, and more likely to challenge providers.

> *A lot of things affect how we interact with patient. One is their education background. How someone who has gone to school understands…is much better than somebody who has not gone to school in terms of communication. But again the reverse is also true like somebody who has not gone to school, I will give her my explanation even in vernacular and she will trust what I am telling her, but somebody who has gone to school … despises the information you are giving….these people will come with their education and feel that what they know is what is right not what you are telling them* (CP1221).

In such conflicting situations, providers seemed to prefer the low SES women, reflected by statements like 'there is one who doesn't know anything, you tell her this is and she does the opposite so you get irritated. But it is better to get the ignorant ones [than] the ones who are learned'. Preference for the 'ignorant ones' was because, ultimately, many providers preferred cooperation over knowledge—and obedience was highly valued. This also appeared to be an expression of the need to maintain hierarchy and control and to exercise power over women. Additionally, some providers felt they could more easily teach those without much prior knowledge, and there was more satisfaction in that.

> *Those who do not have knowledge, I prefer them most because I can teach them. But the one with knowledge is difficult to attend to, like you can not even give health education. How can you give health education and yet she already knows. Actually, for me I like the one without knowledge as I can teach them and tell them the importance of maintaining hygiene. But the clean one, what do you want to tell them about cleanliness and yet they are already clean?* (CP1181).

While it was 'irritating' when women did not understand what they were told, providers noted it was 'hectic' to care for those who felt they know everything. Some providers particularly noted not wanting to care for their fellow providers, because they were knowledgeable and difficult to please, which made caring for them stressful. However, such patients still received good care because of their status and ability to hold them accountable.

> *High status is hectic, just some not all of them. But low status is normal, they are just calm, but high status pretends like they are learned and knows it all…. to deliver a fellow nurse is stress….Yes, very stressful…she will say 'I have not dilated'. 'I have not felt like am having contraction'….Yeah even me if I find myself doing that, I will just behave like a housewife so that I am attended. I won't behave like a nurse. If you act like nurse people will leave you* (CP2022).

Additionally, although wealthier people were thought to be more desirable patients because they could readily provide items needed for their care, providers noted they sometimes exhibited poor attitudes towards them, which could affect how they were treated. For example, wealthier patients were sometimes perceived as looking down on the providers, which made providers want to assert authority over them. In addition, their connections with key people made them more difficult to care for.

> *… some may come to the facility knowing they have a lot of money than you…they feel they are superior… they feel they are young gods, gods in small letters, so they can demand and command whatsoever and they feel…* (CP1161).
> *…some people will come with their financial background and feel they are very important back at home and so [because] you work in this health facility, some small building, you are a useless person. That one again will affect how you handle them* (CP1221).

Situational factors

In addition to the factors addressed above, some providers noted that stress and burnout sometimes led to differential treatment, and this depended on how many providers were on duty or time of day. For example, women may be treated worse if they presented later in the day as providers were usually exhausted by then.

> *… Differential treatment…sometimes come as a result of the burn out. You know when you are alone or few in number in a given day, you tend to use more energy on clients who come first as opposed to those who come later in the day when you are exhausted and the energy level has gone down, so those clients will be treated differently according to energy level* (CP1041).

Discussion

Among maternity providers in rural western Kenya, we found evidence of both implicit and explicit SES biases in providers' perceptions of women that may contribute to PCMC disparities through varied and sometimes contradictory pathways. Women's appearances evoke unconscious behaviours towards them, which reflects societal perceptions of poor/rich women. On the other, hand providers' perceptions of women's ability to understand, their propensity to be cooperative, their expectations and ability to advocate for themselves or hold providers accountable, their ability to pay for services in a timely manner, and other situational factors may differentially influence quality of care for different groups of women. These factors interact in various ways and providing better care to high SES women may not necessarily indicate a preference for such patients or a desire to provide better care to them.

The presence of implicit SES bias among providers in our study is consistent with studies reporting implicit social status and racial biases in the US health care settings (Haider *et al.*, 2015a,b). It is also consistent with the notion that implicit bias is prevalent in every society, although the type of biases may differ across different

contexts (Nosek *et al.*, 2007b). The lack of explicit preference based on women's SES despite implicit bias and the non-significant association between implicit and explicit bias scores is also not surprising, and is consistent with prior studies (Haider *et al.*, 2011, 2015b). A probable reason is the tendency towards social desirability when people report on behaviours such as discrimination in ways that they view as more socially acceptable to others. But it might also be due to the complex interaction between the various factors that lead to differential care. Further, the association between some provider socio-demographic factors and explicit bias scores, but lack of association with implicit bias, might be because reporting on PCMC perceptions is influenced by knowledge, which is in turn influenced by socio-demographic factors. Implicit bias, on the other hand, is not within awareness so is less likely to be influenced by knowledge and social desirability. It is, however, influenced by the socio-cultural context which is similar for all study participants.

This study illuminates factors that might lead to poor PCMC for women of low SES. For example, perceptions that low SES women do not expect providers to introduce themselves may lead to providers not introducing themselves to such women, which limits the development of an initial rapport and affects overall PCMC experience (Afulani *et al.*, 2017b, 2020a). Similarly, the perception that low SES women are not likely to understand explanations implies information may not be provided to such patients, limiting active participation in their own care. In prior studies, involving mostly low SES women in Kenya, Ghana, and India, over 70% reported providers never introducing themselves and 60% reported providers not explaining the purpose of examinations or procedures (Afulani *et al.*, 2019b). The perception that high SES women are more likely to exaggerate their pain could make providers less responsive to women's experience of pain. But, this might be outweighed by the woman's ability to demand pain medications, or other perceptions about likelihood of suing providers if something goes wrong or of having connections to someone who can hold providers accountable. The complex nature of such perceptions might explain the lack of difference in explicit bias towards high and low SES women when all items are summed.

Autonomy and dignified care are key principles of PCMC. Yet close to half of providers in this study agreed that a woman coming to the facility means she has consented to all examinations and treatments and about one-third agreed on physically restraining women. Although there were no statistically significant differences by SES in these questions, the findings are nonetheless significant as they reflect surprisingly inaccurate perceptions on these issues, which may lead to overall poor PCMC—regardless of women's SES. Over one-third of women in a Kenya study reported providers never asked for consent before doing procedures on them (Afulani *et al.*, 2019b), which may be due to provider assumptions about consenting. Perceptions on the need to be stern to convey seriousness and physical restraint to assure cooperation might also account for reports of verbal and physical abuse of women during childbirth (Bohren *et al.*, 2019). Addressing these perceptions are therefore critical to improving PCMC.

We identified potentially modifiable pathways by which women's background characteristics influence differential care and the extent of PCMC they receive, which can inform healthcare interventions and policies. First, interventions to address both implicit and explicit biases based on patient appearance and assumptions on who is more likely to understand, be cooperative, and who can hold providers accountable could help reduce disparities in PCMC. An initial step will involve training to improve provider perceptions of PCMC and to help them recognize and address their biases that lead to

differential treatment. Beyond training, structural interventions are needed to prevent individual provider biases from influencing care (e.g. institutional policies around introductions and consenting and removal of fee for services). Additionally, women's ability to advocate for themselves and to hold providers accountable may be the most important source of SES disparities. Empowering women to advocate for themselves, as well as training providers and companions to serve as advocates for patients and to accept women's self-advocacy, will thus be important: this will involve a shift in the thinking of what constitutes a good patient-provider encounter from the model where a passive patient is desired to embracing a model where all women are encouraged to be active participants in their care. Accountability mechanisms are also critical. It is also important to address the environmental and situational factors that lead to stress and burnout given their contribution to poor PCMC (Afulani *et al.*, 2020b). Furthermore, addressing stress and burnout could help address disparities given that implicit bias is more pronounced in stressful situations (Mendes and Koslov, 2013).

Limitations and strengths

There are a number of limitations to this study: First, given that discrimination is a socially undesirable behaviour, a key limitation in studying explicit bias is social desirability bias as already noted. Second, the composite explicit bias measure used was limited because provider perceptions were not always in the same direction for different aspects of PCMC and it had borderline internal consistency. Examining the individual items and the mixed-methods design helped address this. The questions provide a foundation for additional research on how to quantitatively measure explicit biases related to PCMC. Third, although the IAT is a useful approach to measuring implicit bias, it is limited by the fact that it requires respondents to be able to read and use a computer. Some respondents therefore could not take the test, which decreased the sample size for examining implicit bias. Future research into how to study implicit bias in non-literate populations is needed. Moreover, the predictive validity of the IAT remains a disputed topic, so it is unclear whether implicit bias would translate to differences in behaviour among health care professionals (Blanton *et al.*, 2009; Greenwald *et al.*, 2009; Oswald *et al.*, 2013), and our study design did not allow examination of such relationships. The IAT developed for this study is the first of its kind for this setting and lays the groundwork for such research. Finally, there are limitations related to selection bias and generalizability, given that we used a purposive sample of providers from high-volume facilities in one county in Kenya: PCMC may be poorer in these high-volume facilities than lower volume facilities. Nonetheless, this is one of the few studies on sources of PCMC disparities in a low-resource setting, and it includes a relatively larger number of both clinical and non-clinical providers from different types of facilities than in prior studies. Furthermore, the mixed methods approach addresses a key gap in our understanding of provider assumptions that may underlie PCMC disparities.

Conclusions

Although the IAT has been used for decades to study various implicit preferences and stereotypes, to our knowledge, this is the first study to apply the IAT to PCMC and among the few to use it in African countries. Our study is also among the few to examine provider explicit biases and perceptions related to disparities in PCMC. Our findings provide evidence for the potential role of both implicit

and explicit SES biases in PCMC disparities in Kenya. While women's appearances evoke unconscious behaviours towards them, providers perceptions of women's attitudes, understanding, expectations and ability to hold them accountable interact in a complex manner to produce differential care. The findings imply that multilevel approaches including interventions targeted at women and providers, as well as health system interventions and policies, are needed to improve PCMC and eliminate disparities. Further research to develop and test interventions is however needed. To achieve global goals of reducing maternal mortality and morbidity—'leaving no woman behind'—urgent action is needed to eliminate PCMC disparities. Multicomponent interventions that address provider implicit and explicit biases are essential to achieving this goal.

Notes

1. CP, clinical provider; SS, Support staff.

Supplementary data

Supplementary data are available at *Health Policy and Planning* online.

Ethical approval

The study was reviewed and approved by the University of California, San Francisco Institutional Review Board (IRB number 17-22783) and the Kenya Medical Research Institute Scientific and Ethics Review Unit (SERU 3682). The Migori County health leadership also approved the study to be conducted in the county. All participants provided written informed consent prior to participation.

Conflict of interest statement. None declared.

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