ARTICLE

Racism and Pregnancy Health in Hamilton, Ontario

Racisme et santé durant la grossesse à Hamilton, en Ontario

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ABSTRACT

Eliminating health inequities through reconfiguring major social determinants of health, including discriminatory exclusion from access to power and material resources during early life stages like pregnancy, are among Canada's policy and health provision priorities. To date, though, the role of racism in determining pregnancy or downstream health in Canada has been underexplored.

We investigated whether each of seven pregnancy health/health experiences indicators was associated with a proxy for racialization (implicitly, racism) and/or newcomer-to-Canada status, using logistic regression models fit to questionnaire responses from 300 pregnant people from Hamilton, Ontario. Quantitative analyses were contextualized with thematic data from focus group discussions (FGDs) with 63 pregnant/new parent and/or care provider (e.g., midwife) participants.

Racialization, sometimes compounded by intersecting newcomer-to-Canada status, was associated with twofold-plus increased odds of reporting four pregnancy health/health experiences indicators: complications, inadequate weight gain, low general self-efficacy, and perceived decline in overall health during pregnancy. Yet, while poverty and immigration emerged from FGDs as themes salient to pregnancy health, racism did not.

Racialization predicts adverse pregnancy health/health experiences in this sample, despite Hamiltonians' tendency to discount racism as determining pregnancy health. More aggressively antiracist, intersectional, poverty-reducing policies are needed in Canada to ameliorate pregnancy inequities and promote health equity.

KEYWORDS

pregnancy, health equity, health inequity, racialization, poverty reduction, Ontario, community health

This article has been peer reviewed.

RÉSUMÉ

L'élimination des inégalités en matière de santé par la reconfiguration des principaux déterminants sociaux de la santé, y compris l'exclusion discriminatoire de l'accès au pouvoir et aux ressources matérielles au cours des premiers stades de la vie, comme la grossesse, compte parmi les priorités du Canada en matière de prestation de soins et de politique. Cependant, jusqu'à présent, le rôle du racisme comme facteur déterminant de la santé durant la grossesse ou en aval au pays est peu exploré.

Nous avons examiné l'association entre chacun des sept indicateurs relatifs à l'expérience de la santé durant la grossesse et un substitut pour la racisation (implicitement, le racisme) et/ou le statut de nouvelle arrivante ou nouvel arrivant au Canada. Nous avons appliqué des modèles de régression logistique aux réponses données à un questionnaire par 300 personnes enceintes de Hamilton, en Ontario. Les analyses quantitatives ont été contextualisées avec des données thématiques issues de discussions de groupe menées avec 63 participantes et participants (personnes enceintes, nouveaux parents ou fournisseuses et fournisseurs de soins [p. ex., des sages-femmes]).

Parfois aggravée par le statut de nouvelle arrivante ou de nouvel arrivant au Canada, la racisation a été associée à une possibilité deux fois plus grande de signalement de problèmes en lien avec quatre indicateurs relatifs à l'expérience de la santé durant la grossesse : des complications, une prise de poids inadéquate, un faible sentiment d'efficacité personnelle générale et la perception d'un déclin de l'état de santé global durant la grossesse. Pourtant, alors que les discussions de groupe ont fait ressortir la pauvreté et l'immigration comme thèmes importants en rapport avec la santé durant la grossesse, il n'en a pas été de même pour le racisme.

Dans cet échantillon, la racisation constitue un facteur prédictif d'expériences indésirables au niveau de

la santé durant la grossesse, malgré la tendance des Hamiltoniennes et Hamiltoniens à exclure le racisme comme déterminant de cette santé. Des politiques antiracistes et intersectionnelles plus agressives en matière de réduction de la pauvreté sont nécessaires au Canada pour atténuer les inégalités liées à la grossesse et favoriser l'équité en santé.

MOTS-CLÉS

grossesse, équité en santé, iniquité en santé, racisation, réduction de la pauvreté, Ontario, santé communautaire

Cet article a été évalué par un comité de lecture.

INTRODUCTION

Promoting health equity constitutes a main public policy objective and health practitioner mandate in Canada.[1] Health equity promotion comprises a set of strategies for ensuring that all people have fair and just opportunities to live as healthfully as possible by eliminating avoidable causes of poor health, such as poverty and discrimination, that affect different groups of people unequally.[2] Exposures to environmental drivers of poor health, from preconception and throughout pregnancy, magnify the risk of disease across a person's lifespan and intergenerationally.[3] Building health equity for future generations therefore requires supporting health for pregnant people.

In Canada, the key indicators of modifiable determinants of health include province or territory, rural or urban locality, municipality, gender, sexual orientation, indigeneity, race or ethnicity, and religion.[1] These geographic and socio-demographic factors are composed of proxies rather than modifiable determinants in themselves. In particular, indigeneity, race, and ethnicity are not in themselves modifiable determinants of the health environment. Rather, they can serve as proxies of how likely a person or a population is to have experienced different forms of everyday discrimination, exclusion from access to power and material resources, or trauma related to colonialism and its legacies.[4]

Health experts and organizations have called for an increased focus on measuring and understanding Canadian health inequities in regard to indigeneity and to race and ethnicity as they relate to systemic racism and racialization.[5,6] This push can be traced partly to emerging published evidence of racism within Canadian health care.[7] However, investigations of race and ethnicity have not yet been widely used to identify health inequities during the earliest life-course stages, including pregnancy. Given the key role played by early-life health environment in shaping lifelong developmental, health, and disease risk trajectories,[3] understanding how racialization and racism relate to pregnancy health in a Canadian context is essential. Tackling this issue means distinguishing between key concepts of race and ethnicity versus racialization versus different forms of racism[8] (Box 1).

Canadian population-monitoring organizations and instruments appear reluctant to name race, racism, or racialization as Canadian phenomena, making health equity in relation to racialization challenging to assess.[9] Rather, the Canadian state has since the 1960s focused mainly on tracking two factors that intersect with racialization: immigration history (i.e., where Canadian residents were born) and "ethnic origins" (i.e., the cultural groups to which Canadian residents trace their ancestry). While ethnic identities other than "white" or "European" are highly correlated with experiencing racialization,[10] and while new immigrants from non-European countries are likely to be racialized based on bodily, cultural, or linguistic cues,[11] neither the experience of newcomers to Canada nor that of cultural or linguistic minorities can be treated as equivalent to the experience of racialization. Immigration status and ethnic origin—rather than "race" or racism—are poor indicators of health inequities related to racialization in Canada. Specifically, measures of immigration status and ethnicity (1) fail to implicate

Box 1. Key Terms for Identifying and Discussing Racialized Health Inequities

Term	**Definition**
Race/ethnicity	Race is a group to which a person is ascribed, based on superficial and easily observable phenotypic cues like skin colour, hair colour, or certain clothing items. These cues are generally not informative about a person's population history or genomic make-up. Ethnicity refers to a group with which a person shares a set of cultural traditions and systems of knowledge, belief, and practice. Race/ethnicity is a bundling of these two partly overlapping phenomena, commonly used in social science and health research in Canada.[a]
Racialization	Racialization is the process through which a person has a race or races ascribed to them by other people or institutions. This process affects people who do not code as "white" and is associated with some degree of exclusion from material and/or power resources. It may be interpersonal or statistical and through conscious or unconscious decisions and behaviours.[b]
Racism, structural	Structural racism is a system in which different groups of people, depending on whether group members are typically racialized and in what ways, have unequal levels of access to things and to power as a feature of our broader political, economic, and social systems. Structural racism can, broadly speaking, be considered interchangeable with systemic and institutional racism.[a,c]
Racism, interpersonal (including dominative, modern, aversive, and everyday)	Interpersonal racism involves ascribing persons to a particular group based on superficial and easily observable phenotypic cues and then treating them unfairly because of that ascription (e.g., by not hiring them for a job, or recommending an inferior course of treatment for a health challenge, or actively belittling or hurting them).[c]

[a]Dryden O, Nnorom O. Time to dismantle systemic anti-Black racism in medicine in Canada. CMAJ. 2021.
[b]Ontario Human Rights Commission, Racial discrimination, race, and racism (fact sheet). Toronto: The Commission; (n.d.)
[c]Williams et al. The traumatizing impact of racism in Canadians of colour. Curr Trauma Rep. 2022.

the state's role in driving systemic and structural racism as causes of inequity and (2) cannot be combined with racialization to identify particular people or groups facing multiple, overlapping (i.e., intersecting) challenges that drive inequities.[4] Regarding this second point, we know—from other policy spheres like employment law (where the concept of intersectionality originated)[12] and from life-course health scientific analyses[13]—that multiple layers of exclusion from power (e.g., via racialization *and* via noncitizenship) can have compounding impacts on equity of opportunities and outcomes.[14]

Here, we address some of these blind spots in the framing and measurement of racism in Canadian public health during the critical life-course stage of pregnancy.[9,15] Complementary to recent epidemiological studies already showing differences in pregnancy outcomes in regard to "racial" categories in Canada,[16–18] we investigated links between racialization and pregnancy health in ways attendant to participants' experiences and attitudes. Our project, called the Mothers to Babies (M2B) study, used a mixed-methods, community-level exploratory approach[19–21] that gathered and analyzed qualitative data from 10 focus-group discussions and one stakeholder meeting, which integrated diverse perspectives from care receivers, care providers, and other relevant stakeholders.[21] These qualitative data were combined with responses from local pregnant people to a questionnaire about factors potentially shaping their nutrition and health.[19,20] The M2B study was carried out in the demographically "typical" Canadian city of Hamilton, Ontario.[22]

Using these mixed data, we assessed the extent to which racialized Canadians—in this case, self-identified non-white pregnant Canadians—differ systematically from their white counterparts in regard to seven indicators of pregnancy health and health experiences. We used an intersectionality lens, layering immigration history and an indicator of poverty onto our proxy for racialization, to identify segments of the population that may need bolstered attention, understanding, and support to achieve health parity.

MATERIALS AND METHODS

Setting and Participants

The data reported here are derived from responses to an anonymous questionnaire administered to pregnant people in 2017 and 2018 as part of the M2B study[19,20] and from focus-group data on 63 pregnant or recently postpartum individuals or pregnancy-specialized health or social care providers who participated in 10 focus-group discussions (FGDs) in 2018.[21] The M2B study combined publicly engaged formative research and community-based health intervention development to equitably promote healthy pregnancy in Hamilton, Ontario.[19–21]

Participation in the questionnaire portion of the M2B study was limited to people who self-identified as pregnant and whose residence had a Hamilton postal code. Participation in FGDs was restricted to either pregnant or newly postpartum people living in Hamilton, or health or social care providers working in Hamilton. Providers included midwives, public health nurses specializing in pregnancy, registered dietitians specializing in pregnancy, and early-childhood educators.[21]

To ensure we received responses from a diverse set of pregnant people, we, along with local public health partners, promoted the M2B study at pregnancy health centres disproportionately serving people living with poverty, racialized people, and recent immigrants to Canada (hereafter, newcomers).

Hamilton has a population of about 750,000 residents. The city is socio-demographically diverse and is near the national average in many of its demographic and other parameters, including age, gender, percentage of likely racialized residents, number of newcomers, and walkability.[22] Although approximately 81% of its residents were white as of 2016, Hamilton has been a sanctuary city for refugees (particularly from Syria) since 2014.[21] Since the 2000s, it has also become an important resettlement area for economic migrants of colour from the Caribbean, East and South Asia, Latin America, the Middle East, and parts of Africa. Despite its typicality on many axes, Hamilton has relatively high rates of poverty and socio-economic inequity for a Canadian city of its size and has a persistent, high, and inequitable noncommunicable-disease burden.[23]

Study Instruments

Detailed descriptions of the post-pilot version of the questionnaire and a post-pilot sample are available in previous M2B publications.[19,20] Briefly, the anonymous questionnaire, available in both paper and secure online formats, consisted of 147 items covering a range of domains related to pregnancy health and nutrition. Two of these domains pertain to this study: (1) pre-pregnancy and pregnancy health indicators, and (2) socio-demographic characteristics.

Detailed descriptions of our FGD guides, formats, settings and participants are available in a previous M2B publication.[21] The semistructured, open-ended focus-group questions were designed to contextualize findings from the questionnaire and to capture the responders' experiences of pregnancy with regard to pregnancy health, health-seeking behaviours, and nutrition, both from the perspectives of social and health care providers and from those of birthing persons. We asked participants—both care providers and care receivers—to introduce themselves regarding their relevant histories and experiences and then asked them about the individual structural and environmental factors they perceived as barriers to pregnancy health and nutrition in Hamilton. Participants were also asked for their thoughts on ways to build a healthy next generation in Hamilton, beginning with pregnancy. No questions focused specifically on racism and discrimination; on immigration, language or culture; or on income, poverty, or food security. All FGDs were in English, although two participants engaged via

an interpreter. The discussions took place between February and October 2018, notably before a series of major social and public health events in 2020–2021 precipitated a national conversation about racism and related inequities in Canadian health and social policy and practice.

Measures

Our FGDs and our primary analyses of FGD transcripts were not aimed at examining racism, racialization, or related themes, so these factors were not embedded in our primary coding framework as such. Instead, we assessed perceptions—both among care receivers (i.e., pregnant people and new birth parents) and among care providers (i.e., midwives, public health nurses, dietitians, and early childhood educators)—of racialization, newcomer status, culture and ethnicity, and low income as pregnancy health determinants post hoc. To do so, we used the Find function in Microsoft Word to search through a document comprising merged transcripts from all 10 FGDs for the topics of interest, using all variants identified as Medical Subject Headings (MeSH) terms for each of the topics in PubMed, plus any additional variants we brainstormed. To ascertain whether a speaker implicated a given factor as influencing health outcomes, experiences, policy, or interactions, we handsearched the paragraph in which the term surfaced and the question to which it responded and manually tabulated its context.

We used 14 questionnaire items to measure seven quantitative indicators of reported pregnancy health, experiences, and perceptions. These were (1) "diagnosis with a pregnancy complication," (2) "pregnancy weight gain lower than recommended," (3) "pregnancy weight gain higher than recommended," (4) "worry about gaining too little pregnancy weight," (5) "worry about gaining too much pregnancy weight," (6) "self-efficacy," and (7) "perceived decline in overall health with pregnancy." These measures, the questionnaire items from which they were derived, and how they were scored are presented in Table 1.

The main socio-demographic question of interest in the present study was whether the respondent was likely to be perceived as non-white, based on self-reported race or ethnicity, and thus to be ascribed with a racialized status during pregnancy. We assessed this with one specific questionnaire item based on the Canadian Community Health Survey's 2016 question on race and ethnicity: "What is your racial and/or cultural background? Check all that apply." Check-box options were listed alphabetically in the supplementary materials. All respondents who checked only "White," only "European," or only "White" and "European" were given a score of 0 (nonracialized); all other respondents were given a score of 1 (racialized).

We also measured other socio-demographic variables and three pregnancy-related variables that could confound the predicted relationships between pregnancy health indicators and racialization. The measurement of pregnancy-related variables—weeks' gestation, recalled pre-pregnancy body mass index (BMI) group, and recalled pre-pregnancy overall health—is described in Table 1. The socio-demographic variables were newcomer status, reported age, and a dummy socio-economic position (SEP) score. Respondents were scored as newcomers ("1") if they reported being born outside of Canada and then reported a year of immigration less than 5 years before survey completion; all others were scored as non-newcomers ("0"). Respondents were scored as being in a low SEP ("0") if they reported neither any post-secondary education nor any wage or salaried employment income. If they reported any post-secondary education, any wage or salaried employment income, or both, they were not identified as living in a low SEP ("1"). We also developed composite, intersecting socio-demographic dummy indicators of whether respondents were both racialized and newcomers or both racialized and in a low SEP. In each case, holding both of such statuses was scored as "1," and holding one or none of such statuses was scored as "0." Depending on relative goodness of model fit (see the analysis section below), the term *racialized newcomer status* was used in place of *racialization status* in some models.

Statistical Analyses

After carrying out exploratory analyses to describe the sample and its characteristics, we tested whether a respondent's odds of reporting

Table 1. Measurement of Seven Pregnancy Health and Health Experiences by Responses to Questionnaires from the (Blinded) Hamilton Survey

Variable	Questionnaire Items	Response Options	Scoring
Diagnosis with a pregnancy complication	Has a health care provider diagnosed you with any pregnancy complications?	“yes”, “no”, “not sure”	“yes”= 1, “no” or “not sure” = 0
Pregnancy weight gain lower than recommended	• What week of pregnancy are you in currently? • How tall are you? • How much did you weigh before you became pregnant? • How much do you weigh now?	Open-ended, with whole numbers for gestation weeks and preferred units for height and weight. Respondents were asked their “best guess” if unsure of pregnancy week, pre-pregnancy weight, and current weight.	Calculated BMI for pre-pregnancy and pregnancy, and assessed whether weight at gestation week of response fell below Public Health Canada’s guidelines for pre-pregnancy BMI group. (Below recommended range =1; within/above recommended range = 0)
Pregnancy weight gain higher than recommended	• What week of pregnancy are you in currently? • What is your height? • What was your weight before pregnancy? • What is your weight currently?	Open-ended, with whole numbers for gestation weeks and preferred units for height and weight. Respondents were asked their “best guess” if unsure of pregnancy week, pre-pregnancy weight, and current weight.	Calculated BMI for pre-pregnancy and pregnancy, and assessed whether weight at gestation week of response fell above Public Health Canada’s guidelines for pre-pregnancy BMI group. (Above recommended range = 1; within/below recommended range = 0)
Low general self-efficacy	How strongly do you agree with each of the following statements? • “I can always manage to solve difficult problems if I try hard enough.” • “I can find a way to get what I want even if someone is trying to stop me.” • “It is easy for me to stick to my aims and reach my goals.” • “I am calm when things are difficult, because I know I can cope.” • “If I am in trouble, I can usually find a way to solve the problem.”	“strongly disagree,” “disagree,” “neither agree nor disagree,” “agree,” “strongly agree”	Respondents who agreed or strongly agreed with fewer than half the items = 1 All other respondents = 0
Worry about gaining too little pregnancy weight	Are you worried about gaining not enough weight during pregnancy?	“yes,” “no”	“yes” = 1, “no” = 0

BMI, body mass index

Table 1. continued

Variable	Questionnaire Items	Response Options	Scoring
Worry about gaining too much pregnancy weight	Are you worried about gaining too much weight during pregnancy?	“yes,” “no”	“yes” = 1, “no” = 0
Perceived decline in overall health during pregnancy	• How would you describe your overall health before you became pregnant? • How would you describe your overall health during pregnancy?	“excellent,” “very good,” “good,” “fair,” “poor”	Any responses where overall health during pregnancy was scored as worse during pregnancy compared to pre-pregnancy = 1. Any responses where overall health during pregnancy was scored as the same or better than pre-pregnancy = 0.

any of the seven pregnancy health indicators increased with inferred racialization and/or the potentially intersecting factors of newcomer status and low SEP. We fit a series of four variations on each of seven multiple logistic regression models to the data, each indicator serving as the dependent variable in its set of models. We determined which of the four variations of each model to use for each dependent variable according to which had the lowest Akaike information criterion (AIC) score, a standard metric for goodness of model fit and therefore model selection. The four variations were those in which (1) racialization was the only main independent variable, (2) racialization and newcomer status were both main independent variables, (3) newcomer status was the only main independent variable, and (4) status as a racialized newcomer was the only main independent variable. All models adjusted for age, SEP, gestational age of the fetus, pre-pregnancy BMI, and pre-pregnancy overall health score (Table 2). All statistical analyses were conducted, and all plots were made, in the statistical environment *R*, specifically using the “stat” package,[25] “MASS” (Modern Applied Statistics with S) package,[26] and “ggplot2” package,[27] except for the intersectionality diagram, which was made and scaled in PowerPoint for Mac version 14.7.7 (Microsoft, Redmond, WA).

RESULTS

Questionnaire

The socio-demographic and health characteristics that were included in the main quantitative analyses are presented in Table 3. We received 350 responses to the questionnaire. Missing case data for any particular analysis were omitted; there were low response rates to questions regarding pre-pregnancy weight and pregnancy weight gain, so final sample sizes ranged from 296 to 300 for the analyses reported here.

There were no differences by racialization status in respondents’ age (mean age = ~30–31 years for both racialized and white respondents), pre-pregnancy BMI (mean pre-pregnancy BMI = ~ 25–26 kg/m^2 for both racialized and white respondents), or pre-pregnancy overall health (mean pre-pregnancy overall health score = ~ 3.7 for both racialized and white respondents). Racialized respondents were more likely to have government transfers as their primary source of household income than wages or salaries (30% of racialized respondents vs. 9% of white respondents [^{2} = 19.5, p < .000]) and were more likely to be further along in their pregnancies at survey response (25.1 vs. 22.0 weeks’ gestation, respectively [p = .014]). Newcomers were disproportionately racialized: 78% of newcomer respondents were racialized whereas only 21% of non-newcomers were racialized (^{2} = 37.6, p <

Table 2. Logistic Regression Models to Test Whether Racialization Is Independently Associated with Increased Log Odds of Reporting Any of Seven Pregnancy Health or Health Experiences Indicators*

Model 1	Diagnosis with a pregnancy complication ~ racialization status + maternal age + socio-economic position + gestation week + pre-pregnancy BMI + pre-pregnancy overall health
Model 2	Pregnancy weight gain lower than recommended ~ racialized newcomer status + maternal age + socio-economic position + gestation week + pre-pregnancy BMI + pre-pregnancy overall health
Model 3	Pregnancy weight gain higher than recommended ~ newcomer status + maternal age + socio-economic position + gestation week + pre-pregnancy BMI + pre-pregnancy overall health
Model 4	Low general self-efficacy score ~ racialized newcomer status + maternal age + socio-economic position + gestation week + pre-pregnancy BMI + pre-pregnancy overall health
Model 5	Worry about gaining pregnancy weight below recommendations ~ newcomer status + maternal age + socio-economic position + gestation week + pre-pregnancy BMI + pre-pregnancy overall health
Model 6	Worry about gaining pregnancy weight above recommendations ~ racialization status + maternal age + socio-economic position + gestation week + pre-pregnancy BMI + pre-pregnancy overall health
Model 7	Perceived decline in health with pregnancy ~ racialization status + newcomer status + maternal age + socio-economic position + gestation week + pre-pregnancy BMI + pre-pregnancy overall health

BMI, body mass index
*Each had the lowest Akaike Information Criterion score out of four possible model variations.

.000). Intersections of vulnerabilities, specifically regarding racialization, low SEP, and newcomer status, are presented in Figure 1 .

The results of seven logistic regression analyses are presented in Table 4 and Figure 2. (Results null vis-à-vis racialization or racialized newcomer status are not shown in the figure or discussed further). In Table 4, model 1 indicates that the adjusted odds ratio of diagnosis with a pregnancy complication increases by a factor of 2.50 in racialized respondents compared to white respondents. Model 2 shows that the adjusted odds of gaining less pregnancy weight than recommended increase 4.26-fold for respondents who identified as racialized newcomers. Model 3 indicates that being a newcomer is associated with a reduced likelihood of gaining more pregnancy weight than recommended. This model, which includes newcomer status but not racialization status, fits the data better than any other model, including racialization status.

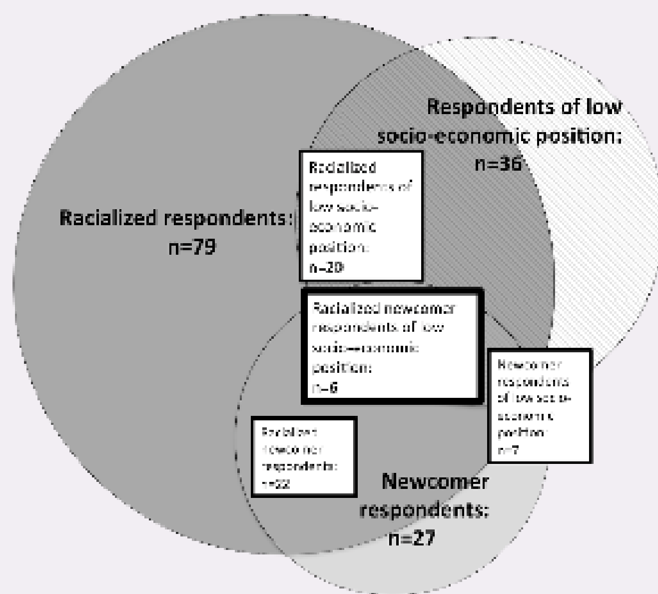
The adjusted odds of reporting low general self-efficacy increase by 4.01 for racialized newcomers, as shown in model 4. Model 5 shows that the adjusted odds of reporting worry about inadequate pregnancy weight gain do not differ by newcomer status. (Models that included racialization status as an additional co-variate or that substituted racialization or racialized newcomer status for newcomer status did not fit the data as well as model 5.) Also, model 5 shows that *not* being in a low SEP is associated with a 0.44 risk of worrying about inadequate pregnancy weight gain. This means that people with a lower SEP, regardless of racialization or newcomer status, are more likely to worry that they will not gain sufficient weight over the course of their pregnancy. Model 6 shows that racialized

Table 3. Socio-demographic Profile of Respondents to the (Blinded) Hamilton Survey

Variable (n)		Frequency
Status as a racialized person (300)	Non-white	79 (26%)
	White	221 (74%)
Status as a newcomer (300)	Newcomer	27 (9%)
	Long-term resident and/or citizen	273 (91%)
Respondent's age in years (300)	Under 20	13 (4%)
	20–34	219 (73%)
	35+	65 (22%)
Fetal age in weeks (300)	Under 14	68 (23%)
	14–27	116 (39%)
	28+	117 (39%)
Whether respondent's main income was from waged or salaried work (300)	Government transfers were main household income source	44 (16%)
	Wages or salaries were main household income source	256 (85%)
Respondent's education (298)	No post-secondary education	82 (28%)
	Any post-secondary education	216 (82%)
Pregnancy complications (298)	No complication diagnosis	241 (81%)
	Complication diagnosis	57 (19%)
Pregnancy weight gain score for gestation week and pre-pregnancy BMI group (296)	Lower than recommended	66 (22%)
	Recommended	108 (36%)
	Higher than recommended	122 (41%)
Worry about gaining pregnancy weight below recommendations (300)	Worried	63 (21%)
	Not worried	237 (79%)
Worry about gaining pregnancy weight above recommendations (298)	Worried	177 (59%)
	Not worried	121 (41%)
General self-efficacy score (299)	Low (strongly disagree, disagree, neutral to 3+ statements)	228 (76%)
	Moderate or high (agree or strongly agree to 3+ statements)	71 (24%)
Pre-pregnancy overall health score (300)	1–2 (poor, fair)	21 (7%)
	3 (good)	91 (30%)
	4–5 (very good, excellent)	188 (63%)
Change in overall health score, pre-pregnancy to pregnancy (300)	Any negative value (perceived decline in health with pregnancy)	90 (30%)
	Zero or any positive value (perceived stasis or improvement in health with pregnancy)	210 (70%)

BMI, body mass index

Figure 1 . Intersecting Vulnerabilities in the Sample.*



*Intersecting vulnerabilities in the sample show that most respondents who are newcomers to Canada and/or are of low socio-economic position are likely to be racialized. At the same time, nearly half of racialized respondents are neither newcomers nor of low socio-economic position, highlighting the need to measure these factors independently and to assess whether or not they are compounding.

respondents may be marginally less likely to report worrying about gaining pregnancy weight above recommendations, compared to white respondents; model 6 also indicates that non-low-SEP respondents are 2.31 times more likely to worry about gaining too much weight during their pregnancy. Model 7 shows that the adjusted odds of reporting worse overall health during pregnancy than prior to pregnancy increase 2.36-fold for racialized people compared to white pregnant people, and tended to be higher for newcomers than for longer-term residents of Canada.

Taken altogether, these logistic regression model results show that racialized and/or racialized newcomer respondents are relatively likely to report diagnoses with pregnancy complications, different kinds of bodily worry, and poorer pregnancy health experiences as compared to white, non-newcomer respondents.

Focus Group Discussions

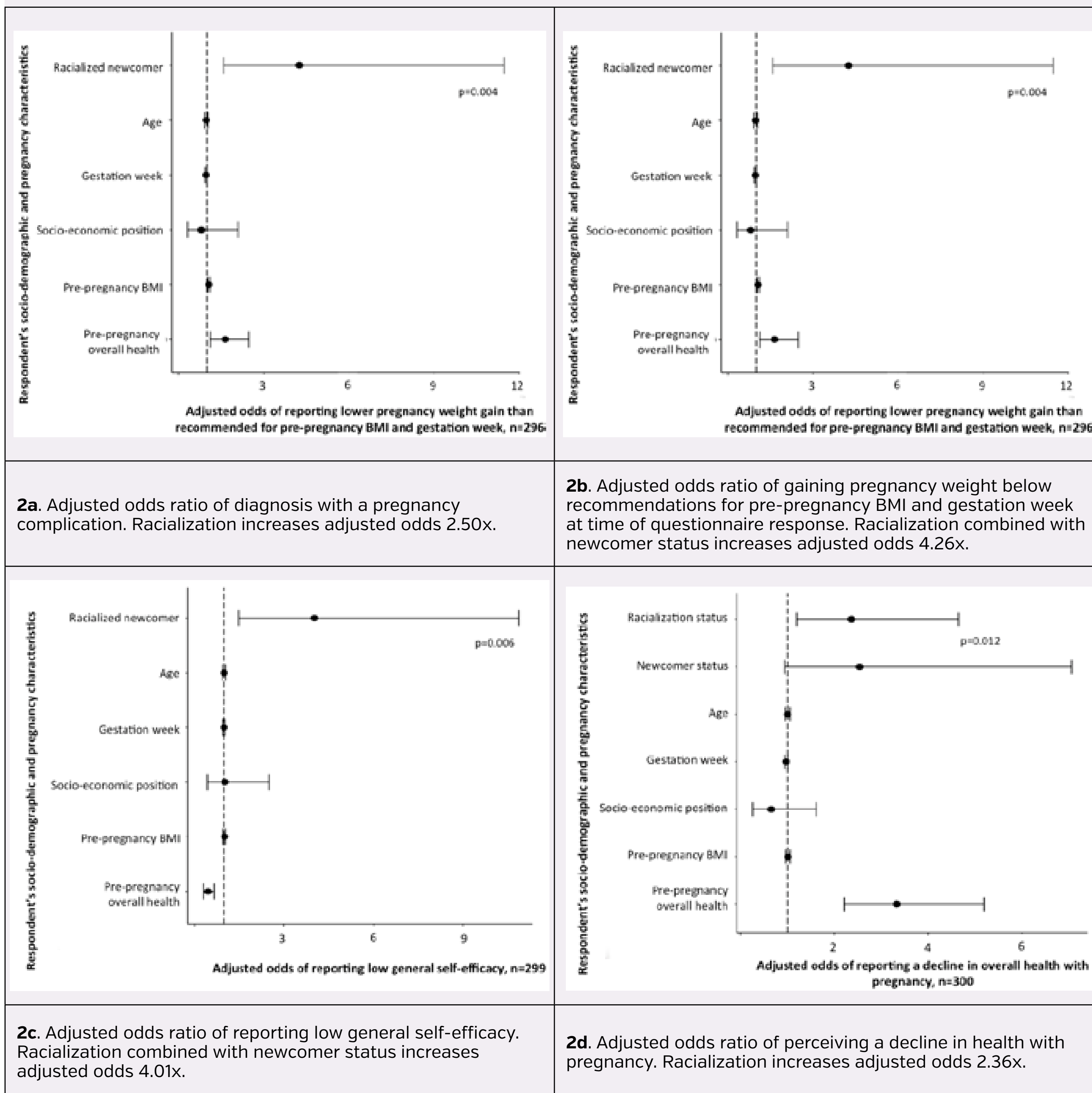
Our FGDs with pregnancy care providers, as well as with pregnant people and people who had recently given birth, yielded more than 16.5 hours of audio recordings—more than 130,000 words (~ 260 single-spaced pages) when transcribed. Remarkably, the terms *race*, *racial**, and *racis** do not appear in the text; this held both for care receivers and for care providers. Social race category names frequently used in common lay speech—like *Asian, Black, Indigenous, Native, Latin**, and *white*—were also conspicuously absent. We found six specific references to nationalities and ethnicities in the transcripts (all by pregnant or postpartum participants rather than care providers), although these were not racialized categories per se (e.g., "my neighbour, who is also Chinese"). None of the mentioned nationalities or ethnicities were put forward in contexts indicating that being of a given background or social group might shape pregnancy health or experiences. In contrast, terms related to immigration and citizenship status (*immigra** or *migrant, citizen*, newcomer, refugee* or *asylum*, and *passpor*t or *residency card*) were mentioned eleven, one, ten, seven, and three times, respectively. Similarly, *language/lingu** and *cultur** were respectively mentioned 17 and 35 times. Ideas related to low income and poverty—which can intersect with immigration history, culture, and racialization—were raised at least 67 times. One hundred percent of these mentions of immigration and citizenship, language and culture, and low income and poverty were in contexts in which the speaker was indicating a barrier or structural factor they perceived as affecting health. So, FGD participants, both care recipients and social and health care providers, viewed being new to Canada, not being fluent in Canada's official languages, and not having enough money as major social determinants of pregnancy health in their city. They did not spontaneously identify racism or race as salient factors.

Table 4. Summaries of Logistic Regression Models of Associations Between Changes in Odds of Reporting Any of the Seven Pregnancy Health or Health Experiences Indicators and Racialization Status

Model	Dependent Variable)	Independent Variables	Estimate (log-odds)	Adjusted Odds Ratio	Lower 95% CI Bound	Upper 95% CI Bound	p-value
1	Report of diagnosis with a pregnancy complication [298]	**Racialization status** (yes)	0.915	2.50	1.29	4.84	0.007**
		Respondent age	0.001	1.00	0.94	1.06	0.983
		SEP score (above lowest)	0.538	1.71	0.68	4.85	0.278
		Gestation week	0.038	1.04	1.01	1.07	0.017
		Pre-pregnancy BMI	0.024	1.02	0.98	1.07	0.298
		Pre-pregnancy overall health	0.482	0.62	0.41	0.91	0.017*
2	Pregnancy weight gain lower than	**Racialized newcomer status** (yes)	1.453	4.26	1.59	11.47	0.004**
		Respondent age	−0.024	0.98	0.92	1.03	0.388
		SEP score (above lowest)	−0.208	0.81	0.33	2.11	0.655
		Gestation week	−0.029	0.97	0.94	1.00	0.053
		Pre-pregnancy BMI	0.071	1.07	1.03	1.12	0.002**
		Pre-pregnancy overall health	0.501	1.65	1.13	2.47	0.012*
3	Pregnancy weight gain higher than	**Newcomer status** (yes)	−0.963	0.38	0.14	0.95	0.047*
		Respondent age	−0.023	0.98	0.93	1.02	0.347
		SEP score (above lowest)	0.327	1.39	0.62	3.18	0.430
		Gestation week	0.078	1.08	1.05	1.11	0.000
		Pre-pregnancy BMI	−0.002	1.00	0.96	1.04	0.904
		Pre-pregnancy overall health	0.060	0.94	0.68	1.31	0.720
4	Low general self-efficacy score [299]	**Racialized newcomer status** (yes)	1.390	4.01	1.47	10.87	0.006**
		Respondent age	−0.006	0.99	0.94	1.05	0.839
		SEP score (above lowest)	0.017	1.02	0.44	2.50	0.968
		Gestation week	−0.009	0.99	0.96	1.02	0.531
		Pre-pregnancy BMI	0.011	1.01	0.97	1.05	0.601
		Pre-pregnancy overall health	−0.775	0.46	0.31	0.66	0.000***
5	Worry about gaining too little weight during pregnancy [300]	**Newcomer status** (yes)	0.7137	2.04	0.81	4.91	0.118
		Respondent age	−0.072	0.93	0.88	0.98	0.010*
		SEP score (above lowest)	−0.827	0.44	0.20	1.00	0.044
		Gestation week	0.003	1.00	0.97	1.03	0.847
		Pre-pregnancy BMI	−0.045	0.96	0.91	1.00	0.073·
		Pre-pregnancy overall health	−0.184	0.83	0.57	1.20	0.326
6	Worry about gaining too much weight during pregnancy [298]	**Racialization status** (yes)	−0.519	0.59	0.34	1.05	0.072
		Respondent age	0.004	1.00	0.96	1.05	0.855
		SEP score (above lowest)	0.836	2.31	1.05	5.25	0.041*
		Gestation week	−0.023	0.98	0.95	1.00	0.062·
		Pre-pregnancy BMI	0.068	1.07	1.03	1.12	0.002**
		Pre-pregnancy overall health	−0.007	0.99	0.72	1.36	0.967
7	Perceived decline in overall health with pregnancy [300]	**Racialization status** (yes)	0.859	2.36	1.20	4.64	0.012*
		Newcomer status (yes)	0.931	2.54	0.94	7.06	0.067·
		Respondent age	0.002	1.00	0.95	1.06	0.932
		SEP score (above lowest)	−0.437	0.65	0.26	1.62	0.342
		Gestation week	−0.029	0.97	0.94	1.00	0.045*
		Pre-pregnancy BMI	0.006	1.01	0.96	1.06	0.825
		Pre-pregnancy overall health	1.202	3.33	2.22	5.19	0.000***

BMI, body mass index; CI, confidence interval; SEP, socio-economic position
*p < .0.05, **p < .010, ***p < .001

Figure 2. Variations in Adjusted Odds of Reporting Any of Four Negative Pregnancy Health Outcomes or Experiences by Racialization Status or Intersecting Racialization and Newcomer Status



2a. Adjusted odds ratio of diagnosis with a pregnancy complication. Racialization increases adjusted odds 2.50x.

2b. Adjusted odds ratio of gaining pregnancy weight below recommendations for pre-pregnancy BMI and gestation week at time of questionnaire response. Racialization combined with newcomer status increases adjusted odds 4.26x.

2c. Adjusted odds ratio of reporting low general self-efficacy. Racialization combined with newcomer status increases adjusted odds 4.01x.

2d. Adjusted odds ratio of perceiving a decline in health with pregnancy. Racialization increases adjusted odds 2.36x.

BMI, body mass index

DISCUSSION

Our post hoc analyses of mixed quantitative and qualitative data from the Mothers to Babies (M2B) Hamilton, Ontario, community pregnancy health and nutrition study point to two findings: (1) A proxy for racialization is associated with increased health challenges and worse health experiences during pregnancy in a Canadian context, and (2) pregnant people, their social and health care providers, and our own research team were unprepared to engage with the language and concepts of race, racism, or racialization as social determinants

of pregnancy health. Based on questionnaire data, and adjusting for other socio-demographic and pregnancy factors, racialized newcomer-to-Canada respondents were at a two- to 4.3-fold increased likelihood of developing pregnancy complications, gaining less than recommended weight during pregnancy, having low general self-efficacy during pregnancy, and experiencing declining overall health with pregnancy. The three metrics of pregnancy health and health experiences we used that were not associated with racialization status were nevertheless associated with variation in SEP and/or newcomer status. In the cases of below-recommended weight gain and low general self-efficacy, racialized newcomers-to-Canada appear particularly vulnerable. A certain tension arose between the questionnaire responses—which showed that racialized pregnant Ontarians experience serious health inequities—and qualitative evidence that caregivers, care receivers, and researchers (at least as of 2018) did not frame these inequities in terms of racism. Understanding the origins of this tension may help drive interest and urgency in collecting data on race, racialization, or racism among pregnant Canadians and in identifying ways to reduce the racism-related health barriers they likely face.

That said, we acknowledge our study's limitations, which may have contributed to the apparent discrepancies between the qualitative and quantitative findings. In particular, we note the relatively small sample size, cross-sectional questionnaire design, and post hoc hypothesis formulation underpinning the quantitative analyses. We further note that our interview guide and our demographic notes tables for our FGDs did not include any probes that might elevate racism or racialization to salience during the discussion. Moreover, the coding and thematic analysis frameworks used in our primary analysis of the FGD transcripts did not include any themes related to racialization of pregnant people (even though this article's lead author is a Black Canadian who was pregnant with her second child during the initial data collation and analysis). Rather, we searched the transcripts nearly 2.5 years post hoc for mentions of themes related to racism and racialization because these concepts simply did not arise spontaneously during the FGDs nor in our original coding and analysis sessions—an issue we have reflected on considerably and have taken forward since we first thought about racialized maternal health in the M2B data in preparation for the Racialized Maternal Health Conference in Toronto, 2019.

Despite these shortcomings, our quantitative data point to a cluster of negative health and experience indicators during pregnancy, which likely reflect adverse intrauterine environments for Canadian babies developing in racialized bodies,[28] especially those further stressed and marginalized by the immigration process. These adverse environments are expected to influence babies' subsequent health outcomes.[29] The increased risks of complications and below-recommended weight gain are particularly concerning, because these factors predict poor birth outcomes,[30] which in turn predict higher risks of noncommunicable disease over the lifespan of both the person giving birth and their child.[3] These findings have implications for policy and practice that pertain to health equity promotion during pregnancy in Canada and possibly in other high-income, "multiracial" democracies. These quantitative data are especially striking in their implications for health policy and practice when articulated with the qualitative data, which suggests that racism and how it might influence pregnancy health and health experiences were not on the tips of the tongues of pregnancy care providers. When asked open-ended questions about social determinants of pregnancy health and about health promotion targets and strategies, care providers were quick to identify cultural, linguistic, and economic factors but not structural or interpersonal racism.

CONCLUSIONS

We suggest that the inequities along the axes of racialization and immigration status that we have identified point to three complementary needs on which policy makers and care providers who aim to promote pregnancy health equity in Canada can focus.

First, a need to develop and use measures of race, racism, and racialization[4] in relation to how these

factors intersect with newcomer status and SEP during pregnancy. Without appropriate measures and an acknowledgement that systemic racism both exists and appears to affect pregnancy health and health experiences independent of immigration history and poverty, policymakers, clinicians, and community health care providers are underequipped to identify and support populations that experience multiple layers of stress and exclusion along multiple axes of inequity *plus* racism.[31–34] Our FGD findings show that Canadian public discussion, at least in 2018, focused on factors associated with but distinct from racialization (e.g., ethnicity, immigration history, poverty) and appeared to avoid racialization as a factor in and of itself. These findings (and our own survey and interview design and our approach to measuring racialization) highlight these blind spots in how Canadians, at least those from Hamilton, appeared to think about race; racism and racialization were not considered salient health determinants or were not to be spoken of.[9] This silence on the health implications of racism is being broken[7] following socio-political reckonings in Canada related to anti-Black, anti-Asian, and anti-Indigenous racism in 2020 and 2021. Nevertheless, we have far to go with respect to interpersonal clinical interactions, community debates and engagement, provincial- and territory-level policy and redistribution mechanisms, and national-level policy foci and data collection and monitoring strategies.[5–7] We therefore underscore the need to move the discussion forward on operationalizing racism and racialization (i.e. recognizing and measuring racism and racialization) in Canada and then regularly collecting national health data, using those operationalizations.[31]

Second, a need to alleviate race-based discrimination in the specific context of prenatal health care provision. While Canadian prenatal care is "universally" available, previous studies have shown that both newcomer and Indigenous Canadians (i.e., people from two populations likely to be racialized) are less likely to engage in full courses of prenatal care, for reasons relating to linguistic accessibility, cultural safety, and geographic remoteness.[35–37] Although we did not measure experiences of discrimination and thus cannot assess whether such experiences complicate racialized Canadians' access to prenatal care, our data clearly shows that racialization status is associated with worse pregnancy health experiences. This is consistent with data indicating that immigrants to Canada who are likely to be racialized perceive such racializing discrimination as a barrier to prenatal care experiences.[32,38] We therefore hypothesize that discrimination, fear of discrimination, lack of cultural safety (care practices and outcomes in which care- or support- receiver's cultural background and way of knowing about the world is recognized and respected by care provider and in which this respect is built into the provider's organization), and other racism-related barriers are likely to delay pregnant people's first meaningful contact with the health care system and increase stress levels when they do engage the system. These challenges may reduce the extent to which racialized pregnant Canadians work with care providers and other supports to mitigate risks and prevent complications. Making prenatal services not just universally available but fully accessible, inclusive, and culturally safe for all residents may help close persistent gaps between racialized and white Canadians, particularly regarding pregnancy complications. Practically, this might entail care organizations' hiring more racialized Canadian care providers, for white care providers to be more explicit in their anti-racism ally-ship efforts, or the development of alternative care frameworks (e.g., group prenatal care tailored to the needs of racialized Canadians).

Third, a need to recognize that racialized differences in pregnancy health experiences and outcomes are partly attributable to racialized socio-economic and geographic inequities.[36] Our data and those of others indicate that racialized Canadians–and especially, racialized newcomers–report relatively high rates of underemployment, socio-economic disadvantages, and reliance on (inadequate) government income supports.[e.g.40] Moreover, systemic racism resulting in racialized geographic patterning of neighbourhood vulnerability and poverty means that racialized and newcomer Canadians are more likely, beyond what would be expected by SEP inequities alone, to

face increased psychosocial stress environmental toxicity exposures[41] and barriers to safe, nutritious, and appropriate foods.[42] Psychosocial stress,[29,43] environmental toxicity,[44] and low food and nutritional security[45] are all known to affect stress-axis functioning, nutrient partitioning, weight gain trajectory, and the risks of metabolic and stress-related complications. Such inequities in geographic and socio-economic exposures offer a plausible mechanism for racialized respondents' being at increased risks of reporting pregnancy complications and lower-than-recommended pregnancy weight gain . These proposed explanations also apply to interpreting similar observations reported in three recent epidemiological studies on pregnancy and birth outcomes in Ontario[16,18,46] and to a comparative US-Canada epidemiological study on racialized inequities in premature births.[17] While these four studies show that non-white Canadians differ from white Canadians in regard to pregnancy health risks, they do not offer structural or sociological explanations for these differences. When looked at alongside the study reported here, though, their data accord with the hypothesis that structural racism contributes to pregnancy health inequities in Canada. Addressing structural, geographic, and socio-economic inequities requires universally lifting people out of poverty, as well as implementing strategies to ameliorate chronic stress and toxicity exposures in both community and prenatal care provision contexts.

Moreover, we argue that more aggressive efforts at anti-racism are needed in Canada. Communities, provinces and territories, and the federal government should dedicate necessary resources to confronting racism in health and related social institutions.[5–7] Furthermore, we and the stakeholders with whom we work recommend establishing universal basic-income policies.[21] While such policies would not expressly ameliorate racism, they would ensure that all people who enter pregnancy can do so with dignity and with access to adequate material resources. Adequate resources—ensuring stable housing, socially- and culturally appropriate diets of high nutritional quality , more social cohesion, and reduced financial stress and worry—will reduce the likelihood of pregnancy complications and inadequate weight gain in pregnancy, shown here to disproportionately affect racialized people who are giving birth. Moreover, policies that reduce racialization or newcomer-related barriers to sound prenatal care should be combined with redistributive economic tactics and conscious continued efforts at dismantling racism.[1,5–7] To meet the Canadian and global charges to eliminate health inequities in the next generations, pregnancy health equity must be placed at the top of policy, intervention, and care model–development agendas.

ACKNOWLEDGEMENTS

We gratefully acknowledge the integral roles in study promotion and data collection played by the full Mothers to Babies (M2B) research team and by our partners at the City of Hamilton Public Health, EarlyON Child and Family Centres, Community Midwives of Hamilton, Hamilton Midwives, and the Canadian Prenatal Nutrition Program. We thank also members of the Sloboda Lab at McMaster University for commenting on earlier versions of this article, greatly improving our analyses and framing of this study. We also extend our gratitude to Mommy Monitor and the Racialized Maternal Health Conference in Toronto for inspiring these analyses. Finally, sincere thanks to the participants in the M2B study, who took valuable time and energy to engage in focus group discussions, share their voices at stakeholder meetings, and respond to an anonymous questionnaire about pregnancy health and health experiences in Hamilton. Without the massive contributions of these amazing women , other birthing people, and pregnancy care providers, this study would have been both impossible and pointless!

This study was reviewed and approved by the Hamilton Integrated Research Ethics Board, study numbers #0570 and #3604.

The data used to carry out the analyses reported in this study are openly available via the Open Science Framework at https://osf.io/s2746/.

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