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Exploring group composition among young, urban women of color in prenatal care: Implications for satisfaction, engagement, and group attendance

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Abstract

Purpose—Group models of prenatal care continue to grow in popularity. Yet, little is known about how group composition (similarity or diversity between members of groups) relates to care-related outcomes. The current investigation aimed to explore associations between prenatal care group composition with patient satisfaction, engagement, and group attendance among young, urban women of color.

Methods—Data were drawn from two studies conducted in New Haven and Atlanta (2001–2004; n=557) and New York City (2008–2011; n=375), designed to evaluate group prenatal care among young, urban women of color. Women aged 14–25 were assigned to group prenatal care and

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completed surveys during their second and third trimesters of pregnancy. Group attendance was recorded. Data were merged and analyzed guided by the Group Actor-Partner Interdependence Model using multilevel regression. Analyses explored composition in terms of age, race, ethnicity, and language.

Main findings—Women in groups with others more diverse in age reported greater patient engagement and, in turn, attended more group sessions [$b(se) = -0.01(0.01)$, $p=0.04$].

Conclusion—The composition of prenatal care groups appears to be associated with young women's engagement in care, ultimately relating to the number of group prenatal care sessions they attend. Creating groups diverse in age may be particularly beneficial for young, urban women of color, who have unique pregnancy needs and experiences. Future research is needed to test the generalizability of these exploratory findings.

Keywords

adherence; attendance; Group Actor-Partner Interdependence Model; group composition; prenatal care

Introduction

Group prenatal care, involving shared visits of pregnant women with a prenatal care provider, is gaining in popularity. For example, since the first CenteringPregnancy (a group model of prenatal care) site opened in 1999, there has been a steady growth in the spread and uptake of the model. As of June 2015, there were over 300 sites located in all but five states (Centering, 2015). Growing evidence suggests outcomes of group prenatal care are either comparable to or better than traditional individual prenatal care. Infants born to women in group prenatal care have longer gestations and heavier birth weights (Ickovics et al., 2007; Thielen, 2012). Women in group prenatal care report greater satisfaction with care and attend more visits (Massey, Rising, & Ickovics 2006). Group prenatal care may be particularly beneficial for young, urban women, who have unique social, developmental, and cultural needs during pregnancy (Klima, 2003). Despite its benefits, there are challenges to implementing group prenatal care in this population. In a recent translational study, greater group attendance was associated with better birth outcomes, but young women attended only approximately half of recommended visits (author citation removed for review). It is important to identify predictors of group attendance among this population.

We focus on the association of group composition with women's satisfaction with and engagement in care, and their group attendance. Group composition refers to similarity or diversity between members of groups, including in terms of age, race, ethnicity, and language. Group composition is a potential target for intervention: Unlike other predictors of attendance (e.g., mother's education; Frisbie, Echevarria, & Hummer, 2001), providers can control the composition of groups to achieve maximum potential for attendance. Yet, there is little research on effects of prenatal care group composition to inform how to best compose groups. In a qualitative study, Novick and colleagues (Novick et al., 2011) found that women in group prenatal care were conscious of similarities and differences between women in their groups. Women said similarities could be comforting, promoting

connections between group members. Women also said differences were valued, with diversity between group members allowing for exchange of advice and mentorship. For example, Novick and colleagues noted that “older women liked to share stories with younger women” (p. 13).

Research from outside of prenatal care also suggests benefits of both similarity and diversity in composition of interaction partners, including in groups and pairs. In healthcare settings, studies on racial concordance between patients and physicians demonstrate Black patients are more satisfied with care received from and are more likely to schedule healthcare appointments with Black physicians (Dovidio et al., 2008). Additionally, some studies in employment contexts suggest similarity between mentees and mentors is associated with better outcomes for mentees (Ensher & Murphy, 1997; Foley, 2006). In educational settings, in contrast, studies on racial composition of student populations demonstrate greater diversity is associated with positive educational and psychosocial student outcomes (Bowman, 2010; Hurtado, 2005; Juvonen, Nishina, & Graham, 2006). Students who have positive interactions with diverse peers may experience a stronger sense of belongingness (Locks et al., 2008), which may link diversity to positive outcomes.

In the current investigation, we adopted an exploratory approach and examined whether group composition in age, race, ethnicity, and/or language is associated with young, urban women of color’s satisfaction with and engagement in group prenatal care. Given evidence that patients who are more satisfied with and engaged in care are more adherent (Bakken et al., 2000; Schneider et al., 2004), we further examined whether group composition is associated with group session attendance via the mediating mechanisms of patient satisfaction and/or engagement.

Material and Methods

Data were from two separate randomized controlled trials evaluating CenteringPregnancy. Study 1 was conducted in New Haven and Atlanta in two university-affiliated hospitals, with 653 women randomized to group prenatal care between 2001 and 2004. Study 2 was conducted in New York City in 14 community hospitals and health centers, with 623 women at clinical sites randomized to group prenatal care between 2008 and 2011. Inclusion criteria for both studies included pregnancy less than 24 weeks gestation, no medical problems indicating high-risk pregnancy, ability to speak English or Spanish, and willingness to participate in study procedures. Study 1 participants were aged 14–25 years, whereas Study 2 participants were aged 14–21 years.

Structured interviews were completed in English or Spanish using audio computer- or handheld-assisted self-interviewing technology. Baseline interviews were completed during second trimester and second interviews were completed during third trimester of pregnancy. Both studies were reviewed and approved for human subjects protections by Institutional Review Boards. Study 1 was reviewed at Yale University School of Medicine (Human Investigations Committee) and Emory University. Study 2 was reviewed at Yale University School of Medicine (Human Investigations Committee), Clinical Director's Network, Biomedical Research Alliance of New York (BRANY), Columbia University, Bronx-

Lebanon Hospital Center, Brookdale Hospital (Research and Clinical Projects Committee), Brooklyn Hospital, Public Health Solutions, and Lutheran Medical.

Participants

Analyses were limited to women who were assigned to group prenatal care, attended at least one session with at least two other women before their second interview, and completed the second interview. Criteria regarding group size (i.e., three women) were guided by recommendations for Group Actor-Partner Interdependence Model analyses (Garcia, Meagher, & Kenny, 2014). Meeting these analysis criteria were 557 women from Study 1 and 375 women from Study 2. Study 1 participants included in this investigation were similar to participants of the overall Study 1 in terms of age, race, ethnicity, and language. Study 2 participants included in this investigation were more likely to be Latina and slightly more likely to speak Spanish than participants of the overall Study 2.

Measures

Women reported socio-demographic characteristics, including age, race, ethnicity, and whether they felt most comfortable speaking English or Spanish at the baseline interview.

Satisfaction with and engagement in care was measured using the Patient Participation and Satisfaction Questionnaire (Littlefield & Adams, 1987) at the second interview. Previous work has found evidence of supporting the content and construct validity of the Questionnaire, as well as its reliability (Cronbach's $\alpha=0.83-0.97$). The Satisfaction subscale was used to measure satisfaction and included 6 items from the original scale (e.g., "Your wishes were taken into consideration about breathing techniques during prenatal care," "Your wishes were taken into consideration about medications during prenatal care"), and 1 item added by the study team ("Overall, how satisfied were you with your prenatal care?"). The Participation subscale was used to measure engagement,¹ and included 16 items from the original scale (e.g., "Procedures and special tests were clearly explained to you before they were done during prenatal care," "Your questions were answered honestly and openly during prenatal care," "You were allowed choices in your prenatal care"), and 2 items added by the study team ("You were allowed to actively participate in your own prenatal care," "You could voice your opinions about your care during prenatal care"). All responses were on a 5-point scale ranging from *very dissatisfied* (1) to *very satisfied* (5). Following the example of Littlefield and Adams (1987), items were summed to reflect composite scores for satisfaction and engagement. Reliability scores in the current sample were strong (Cronbach's $\alpha=0.94-0.95$).

Number of group visits attended was recorded by the study team (Study 1) or abstracted from medical charts (Study 2).

¹Littlefield and Adams refer to this construct as "participation." We use the term "engagement" to differentiate the construct from our primary outcome of prenatal care group attendance and emphasize active involvement in care.

Analysis Procedure

Analyses were guided by recommendations described by Kenny, Garcia, and colleagues to test the Group Actor-Partner Interdependence Model (Garcia et al., 2014; Kenny & Garcia, 2012). This model proposes that group members' thoughts, feelings, and behaviors are related to who they are in relation to other members of their group, and who other group members are in relation to each other. The model defines a quantitative approach to examine the effects of group composition, including similarity and diversity between group members, on individual group members' outcomes. Investigators must include four variables to represent group composition in their analyses. The first is the *actor effect*, which is the effect of a characteristic of individual participants on the outcome (e.g., if women's age is related to patient satisfaction). The second is the *other effect*, which is the effect of characteristics of other participants in the group on the outcome (e.g., if age of others in the group is related to women's patient satisfaction). The third is *actor similarity*, which is the effect of the actor's similarity to others in the group on the outcome (e.g., if women in groups with others more similar to themselves in age are more satisfied). The fourth is *other similarity*, which is the effect of others' similarity to each other on the outcome (e.g., if women in groups with others who are more similar to each other are more satisfied).

Variables representing actor effects, other effects, actor similarity, and other similarity were calculated for age, race, ethnicity, and language in SPSS v.21 using a macro (Kenny, 2014). These variables were then included in a multilevel regression analysis, wherein we estimated their associations with individual-level patient satisfaction and engagement. We included all variables simultaneously to estimate their unique effects (e.g., to understand the unique effect of race while controlling for ethnicity), and further controlled for the effect of Study 1 vs. Study 2. Analyses accounted for clustering by group and site, and analysis assumptions were met. Figure 1 displays how individual women were clustered within groups, which were clustered within sites.

To examine whether group composition was associated with group session attendance via the mediating mechanisms of patient satisfaction and/or engagement, we estimated indirect effects in mPlus v.7.2 with bootstrapping. Analyses employed Poisson regression given the count dependent variable.

Results

Table 1 describes participant socio-demographics and scores on outcomes of interest for the combined sample, and participants of studies 1 and 2 individually. Overall, participants were close to 20 years old, with over half identifying as Black, approximately one-third identifying as Latina, and the majority preferring to speak English. Study 1 participants were slightly older and more identified as Black than Study 2 participants. More Study 2 participants identified as Latina and preferred to speak Spanish. Although high across both studies, Study 1 participants reported slightly higher patient satisfaction and engagement. Participants attended an average of 6.5 group sessions out of 10, with Study 1 participants attending more sessions on average.

There were 137 groups, with 77 (56.2%) from Study 1 and 60 (43.8%) from Study 2. Group sizes ranged from 3 to 12 women, with an average of 6.80 (SD=2.28). Figure 2 depicts group composition in age, race, ethnicity, and language. For age, groups were diverse with almost all groups including a mix of women from across the age spectrum represented in the studies. For race, approximately 30% of groups were all Black, 20% were all “other,” and 50% included a mix. For ethnicity, approximately 10% of groups were all Latina, 40% were all “other,” and 50% included a mix. For language, approximately 50% of groups all preferred speaking English, 5% all preferred Spanish, and 45% included a mix. Notably, the majority of mixed language groups included mostly women who preferred English.

Table 2 includes results of Group Actor-Partner Interdependence Model regression analyses. For patient satisfaction, significant *actor effects* of race [b(se)= 1.20(0.59), p=0.04], ethnicity [b(se)= 2.17(0.61), p 0.001], and language [b(se)= -2.19(0.59), p 0.001] suggest women who were Black, Latina, and preferred to speak English were more satisfied with their prenatal care. There were no *other effects*, or *effects of actor* or *other similarity*. For patient engagement, likewise significant *actor effects* of race [b(se)= 0.60(0.31),p=0.05], ethnicity [b(se)= 0.72(0.33),p=0.03], and language [b(se)= -0.73(0.33),p=0.02] suggest women who were Black, Latina, and preferred to speak English were more engaged in their prenatal care. The significant, negative effect of *other similarity* in age on patient engagement [b(se)= -0.18(0.09),p=0.04] suggests that women in groups with others who were less similar in age were more engaged than women in groups with others who were more similar in age.

Mediation analyses tested whether *other similarity* in age was associated with group attendance via greater patient engagement. Analyses adjusted for clustering by group; and controlled for effects of actor age, other age, actor similarity in age, actor race, actor ethnicity, actor language, and study. These analyses demonstrated a significant effect of patient engagement on group attendance [b(se)= 0.40(0.10), p 0.001], suggesting women who reported greater engagement attended more groups. There was a significant indirect effect of *other similarity* in age on group attendance via patient engagement [b(se)= -0.01(0.01), p=0.04], suggesting women assigned to groups with women less similar in age, or more diverse, were more engaged in their care and in turn attended more groups.

Discussion

Findings suggest that prenatal care group composition, particularly in terms of age, may relate to patient engagement and group attendance among young, urban women of color. Given the lack of prior research on effects of group composition in prenatal care, the current investigation was exploratory. Previous research has identified benefits of both similarity and diversity of group composition in different settings. Our findings are most similar to those in educational settings, which suggest benefits of diversity among students (Bowman, 2010; Juvonen et al., 2006). Prenatal care might be similar to these settings in that both involve an educational component and interactions between peers. Diversity could be more advantageous in these types of settings in contrast to those involving interactions between persons of unequal status (e.g., patients and providers). Future research might continue to

explore settings in which similarity versus diversity in group composition is most advantageous.

Previous research has focused on group composition in terms of race or gender (Bowman, 2010; Dovidio et al., 2008; Ensher & Murphy, 1997; Foley, 2006; Hurtado, 2005), yet the current investigation highlights the importance of group composition in terms of age. Age may play a particularly important role for pregnant women, with pregnant teenagers having different experiences (Rosenthal et al., in press) and needs (Klima, 2003) than pregnant women. Given these unique needs, prenatal care programs sometimes separate pregnant teenagers from pregnant women. The current investigation, however, suggests that pregnant teenagers may benefit from interaction with those who are slightly older and potentially more mature. These slightly older pregnant women may also benefit from interaction with pregnant teenagers, enabling the slightly older women to share experiences and advice with younger women. Similar to effects found in educational settings (Locks et al., 2008), it is possible that women in groups more diverse in age experience a greater sense of belongingness, which promotes greater engagement. Future researchers may continue to explore age to understand how it affects interpersonal interactions in group prenatal care contexts. Researchers may also explore the role of diversity of age in other prenatal care contexts such as peer mentor programs, which often pair older mothers with younger pregnant women to engage and empower women in prenatal care (e.g., Mothers2Mothers; Teasdale & Besser, 2008).

Strengths and Limitations of Investigation

The investigation drew on data from two studies, resulting in a sample of 932 women in group prenatal care spanning 137 groups. The study was longitudinal, with data on patient satisfaction and engagement collected at approximately session 7 out of 10 potential group prenatal care sessions. It further applied an innovative data analytic technique guided by Group Actor-Partner Interdependence Model to studying group composition in prenatal care. Group composition is understudied, yet has potential as a target of intervention to enhance patient engagement and attendance.

Despite these strengths, the study drew on a relatively homogeneous sample composed of young, urban women of color. This limited variability in the sample, which is important for detecting effects related to diversity. For example, we did not have enough diversity in parity in the current investigation to test whether group composition in terms of prior births is associated with care-related outcomes. It further limits the generalizability of findings to older, non-urban women in prenatal care. Future studies should continue to examine the effects of group composition in prenatal care across different participant characteristics, including those speaking different languages, and within different populations, including those with different cultural preferences. Future work should also explore the mechanisms underlying these effects to better understand why diversity in age may be beneficial for young, urban women.

Conclusions

Women in prenatal groups with others who were more diverse in age reported feeling more like active and engaged participants whose wishes would be taken into account in their prenatal care. This greater engagement, in turn, was associated with attending more group prenatal care sessions, which past work has found to be associated with better pregnancy outcomes (author citation removed from review).

Implications for Practice

Creating prenatal groups diverse in age may be beneficial for young, urban women of color. As group models of prenatal care continue to grow in popularity, more research is needed to explore the implications of group composition on care-related outcomes. With greater knowledge of these implications, providers may be able to compose groups that promote engagement, attendance, and ultimately better birth outcomes among even the most vulnerable and underserved pregnant women.

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Figure 1. Multilevel Model

Individual women were clustered within prenatal care groups, which were clustered within sites.

Figure 2. Group Composition

Categories labeled “all” include groups in which women all shared the characteristic (100%). Categories labeled “majority” include groups in which the majority of women shared the characteristic (51%–99%). Categories labeled “half” include groups in which women were equally split on the characteristic (50%).

Table 1

Participant Socio-demographic Characteristics and Outcomes, % (n) or M (SD)

	Total (N=932)	Study 1 (n=557)	Study 2 (n=375)
Socio-demographic Characteristics			
Age (14–25)	19.60 (2.44)	20.28 (2.55)	18.59 (1.85)
Race			
Black	63.2 (589)	81.1 (452)	36.5 (137)
Other	36.8 (343)	18.9 (105)	63.5 (238)
Ethnicity			
Latina	29.9 (279)	11.3 (63)	57.6 (216)
Other	70.1 (653)	88.7 (494)	42.4 (159)
Language			
English	81.3 (758)	88.9 (495)	70.1 (263)
Spanish	18.7 (174)	11.1 (62)	29.9 (112)
Outcomes			
Patient Satisfaction (17–85)	73.80 (10.85)	76.96 (9.06)	69.09 (11.58)
Patient Engagement (8–40)	34.60 (5.61)	36.02 (5.08)	32.48 (5.68)
Groups Attended (1–10)	6.54 (2.39)	7.13 (2.22)	5.65 (2.35)

Table 2

Group Actor-Partner Interdependence Model Effects on Patient Satisfaction and Patient Engagement, B (SE)

	Patient Satisfaction	Patient Engagement
Age		
Actor effect	0.12 (0.15)	0.10 (0.08)
Others' effect	0.20 (0.38)	0.01 (0.21)
Actor similarity	−0.15 (0.12)	−0.04 (0.06)
Other similarity	−0.21 (0.16)	−0.18 (0.09)*
Race: Black		
Actor effect	1.20 (0.59)*	0.60 (0.31)*
Others' effect	1.49 (1.36)	0.67 (0.73)
Actor similarity	0.15 (0.84)	0.76 (0.44)
Other similarity	0.73 (1.02)	−0.72 (0.54)
Ethnicity: Latina		
Actor effect	2.17 (0.61)**	0.72 (0.33)*
Others' effect	0.23 (1.33)	0.09 (0.72)
Actor similarity	−0.38 (0.81)	−0.67 (0.43)
Other similarity	0.19 (0.99)	0.38 (0.53)
Language: Spanish		
Actor effect	−2.19 (0.59)**	−0.73 (0.31)*
Others' effect	−0.52 (1.08)	−0.01 (0.58)
Actor similarity	0.52 (0.86)	0.24 (0.46)
Other similarity	0.02 (1.02)	0.24 (0.46)
Study	−6.04 (1.31)**	−2.70 (0.71)**

Note:

*
p 0.05;**
p 0.01