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Patient–provider race-concordance: does it matter in improving minority patients' health outcomes?

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Abstract

Objective—To understand if patient–provider race-concordance is associated with improved health outcomes for minorities.

Design—A comprehensive review of published research literature (1980–2008) using MEDLINE, HealthSTAR, and CINAHL databases were conducted. Studies were included if they had at least one research question examining the effect of patient–provider race-concordance on minority patients' health outcomes and pertained to minorities in the USA. The database search and data analysis were each independently conducted by two authors. The review was limited to data analysis in tabular and text format. A meta-analysis was not possible due to the discrepancy in methods and outcomes across studies.

Results—Twenty-seven studies met the inclusion criteria. Combined, the studies were based on data from 56,276 patients and only 1756 providers. Whites/Caucasians (37.6%) and Blacks/African Americans (31.5%), followed by Hispanics/Latinos (13.3%), and Asians/Pacific Islanders (4.3%) comprised the majority of the patient sample. The median sample of providers was only 16 for African Americans, 10 for Asians and two for Hispanics. The review presented mixed results. Of the 27 studies, patient–provider race-concordance was associated with positive health outcomes for minorities in only nine studies (33%), while eight studies (30%) found no association of race-concordance with the outcomes studied and 10 (37%) presented mixed findings. Analysis suggested that having a provider of same race did *not* improve 'receipt of services' for minorities. No clear pattern of findings emerged in the domains of healthcare utilization, patient–provider communication, preference, satisfaction, or perception of respect.

Conclusions—There is inconclusive evidence to support that patient–provider race-concordance is associated with positive health outcomes for minorities. Studies were limited to four racial/ethnic groups and generally employed small samples of minorities. Further research is needed to understand what health outcomes may be more sensitive to cultural proximity between patients and providers, and what patient, provider and setting-level variables may moderate or mediate these outcomes.

Keywords

race; ethnicity; minorities; concordance; disparities; health; outcomes

Introduction

Despite improvements in the nation's overall health, minorities continue to receive differential treatment in the American healthcare system. Considerable research has emerged highlighting the existence of racial/ethnic disparities resulting in minority patients receiving poor quality of care and experiencing poor outcomes among many health indices (Smedley *et al.* 2002). Many factors contribute to creating and sustaining health disparities including the influence of health system, utilization managers, patients, as well as bias, stereotyping, and clinical uncertainty on the part of healthcare providers (Smedley *et al.* 2002). Understanding pathways leading to racial/ethnic disparities in health continues to be a challenge. While many factors are believed to influence health disparities in racial/ethnic minorities, recent efforts have been directed toward understanding if patient-provider race-concordance may lead to improved health outcomes for minority patients.

The emergence of race-concordance concept within health disparities research represents a response to the enduring nature of health disparities and is an attempt to appeal to a basic social question, that is, are people able to identify, relate, understand, and interact more with those who may share their values and cultures? The hypothesis under girding race-concordance research is that racial/ethnic disparities in health may be ameliorated as a result of increased mutual respect, trust, communication, and satisfaction, which may exist more in race-concordant patient-provider relationships. Thus, the notion of concordance within healthcare embodies the idea of a therapeutic alliance between patients and providers (Bissell *et al.* 2004). The strength of such an alliance lies in the respect for patients' agenda and the creation of openness in patient-provider relationship, so that both patients and providers can proceed to mutually agreed upon goals (Bissell *et al.* 2004).

Over the past two decades studies on race-concordance have failed to generate a general consensus on the association of race-concordance and improvement in health outcomes. The lack of clarity within the existing research heightens the importance of an analysis of this body of literature. To this end, the authors conducted a comprehensive review and analysis of the published research to answer the question, does patient-provider race-concordance matter in improving minority patients' health outcomes?

Methods

A comprehensive review of published research literature was conducted using three bibliographic databases; Ovid MEDLINE (1980–2008), HealthSTAR (1980–2008), and CINAHL (1982–2008). A database search was conducted independently by two of the authors using key words race, ethnicity, concordance, or race-concordance. The search was limited to research articles with an abstract, published in English language. This independent review generated a list of 159 potentially relevant citations (Figure 1). The abstract of each of these 159 titles was reviewed independently by two authors. Studies were included if they had at least one study question examining the effect of patient-provider race-concordance on health outcomes pertaining to minority patients. Only articles published in the USA were considered. The inclusion was *not* limited based on the study design or sample size. Thus, both qualitative and experimental studies were included if they pertained to an actual or hypothetical minority patient population and addressed a research question about patient-provider race-concordance. Studies were excluded if the race-concordance research question

did not pertain to at least one minority patient group, or pertained to minorities in non-health related settings (Weisse *et al.* 2005).

Thirty articles were identified that met the above inclusion criteria. An initial review of the articles was conducted by two of the authors to identify specific race-concordance outcome studied and grouped them according to meaningful outcome categories; six major categories emerged, that is, provision of healthcare, utilization of healthcare, patient-provider communication, patient satisfaction with provider of same race, patients' preference for provider of same race, and perception of respect in race-concordant relationships. The studies that did not fit any of the above categories were grouped as 'other studies'. These included selection of a regular physician (Gray and Stoddard 1997), interventionist race and change in caregiver depression or burden (McGinnis *et al.* 2006), and perceived medical errors (Stepanikova 2006). These studies were finally excluded as they studied diverse outcomes that could not be grouped under another meaningful category. After applying these inclusion and exclusion criteria, a list of 27 articles were selected for the final analysis.

Data analysis

The review was limited to data analysis in tabular and text format. A meta-analysis was not possible due to the discrepancy in methods and outcome measures between the studies. The quality of the articles was evaluated using a structured data extraction form generated based on the Agency for Healthcare Research and Quality guidelines to rate the strength of scientific evidence (AHRQ 2002). Studies were evaluated in five domains: (1) appropriateness of study question and design; (2) study sample; (3) comparability of subjects; (4) measurement of outcomes; and (5) appropriateness of study conclusions. Based on the main race-concordance conclusions, each study was coded as having 'positive findings', 'negative findings', or 'mixed findings'. If a study found an association of race-concordance with outcome of interest for *all* minority groups included in that study, it was coded as a study with 'positive finding'. If a study found no association of race-concordance with outcomes for *any* of the minority groups, the study was coded as with 'negative findings'. Since our interest was to understand the effect of race-concordance for minorities, the authors still coded a study as having 'negative' support, if it found an association of race-concordance for only Whites/Caucasians but *none* of the minority patients. Finally, studies were characterized as yielding 'mixed findings' if there was partial support for race-concordance for certain outcomes or if the race-concordance was supported in some but not all minority groups included in a particular study. Each study was reviewed by two of the authors who independently completed the data extraction forms. The results were then compared and the numbers of discrepancies between the authors were recorded. All identified discrepancies were resolved with re-review of the articles and discussion between the authors. SPSS 13.0 was used to conduct a descriptive analysis of the pooled patient and provider sample from the included studies. If multiple studies were published using a single data source and had the same underlying sample, their sample size was counted only once to prevent double counting.

Results

Twenty seven research publications of patient-provider race-concordance met our eligibility criteria. The specific concordance outcome and setting ranged widely across studies. Table 1 summarizes the sample characteristics, design, major findings and limitations of the included studies. The studies were heterogeneous with regard to the design and the data collection methods. Of the 27 studies, the majority ($n=15$) were retrospective or employed a secondary analyses. Studies that used secondary analyses included data ranging from 1987 (Konrad *et al.* 2005) to 2001 (Blanchard *et al.* 2007). Four studies were qualitative (Garcia *et al.* 2003, Zayas *et al.* 2005, Gordon *et al.* 2006, Brown *et al.* 2007), three used cross-

sectional surveys (Cooper-Patrick *et al.* 1999, Stevens *et al.* 2003, Lasser *et al.* 2005) and one collected data from actual patient–provider interactions (Tai-Seale *et al.* 2005). One was a prospective study (Cooper *et al.* 2003) and three used an experimental design using hypothetical vignettes (McKinlay *et al.* 2002, Bender 2007, Modi *et al.* 2007).

Table 2 presents the pooled analysis of the patient and provider sample by racial/ethnic categories. Combined, the studies included 56,276 patients and only 1756 health providers. The majority of the total patient sample was comprised of Whites/Caucasians and Blacks/African Americans (37.6 and 31.5%, respectively) followed by Hispanics/Latinos (13.3%), Asians/Pacific Islanders (4.3%), and ‘Other’ category (13.3%). Similarly, in the pooled analysis of the provider sample, Whites/Caucasians represented the predominant racial group (78.6%). Blacks/African Americans, Asians/Pacific Islanders and Hispanics/Latinos combined accounted for only 21% of the provider sample (10.9%, 8.9%, and 1.2%, respectively). Fourteen of the 27 studies (52%) did not include a provider sample as they relied on patients’ perceptions or self-report about provider of same race/ethnicity. The median sample for providers was only 16 African Americans, 10 Asians and two Hispanics (Table 2).

Of the 27 studies, patient–provider race-concordance was associated with positive health outcomes for minorities in only nine studies (33%), while eight studies (30%) found no association of race-concordance with the outcomes studied and 10 (37%) presented mixed findings (Table 1). In the nine studies that supported race-concordance, patient–provider race/ethnicity was associated with timely receipt of treatment (King *et al.* 2004), provision of more aggressive treatment (Modi *et al.* 2007), greater use of needed medical services (LaVeist *et al.* 2003) and preventive care (Saha *et al.* 2003, Lasser *et al.* 2005), improved communication and participatory decision making (Cooper-Patrick *et al.* 1999, Cooper *et al.* 2003), and preference for (Saha *et al.* 2000) and greater satisfaction with provider and healthcare (LaVeist and Carroll 2002, LaVeist and Nuru-Jeter 2002, Cooper *et al.* 2003).

To further understand what outcomes were sensitive to racial/ethnic proximity between patients and providers, the specific race-concordance outcome in each of the 27 studies were evaluated and grouped under a broad category of outcomes (Table 3). Some studies evaluated the association of race-concordance with more than one outcome (Malat 2001, Cooper *et al.* 2003, Saha *et al.* 2003, Schnittker and Liang 2006) and were grouped under more than one outcome category.

The most distinct pattern of findings emerged in the category of ‘provision of healthcare’ ($n = 8$) (Table 3). Except for two studies (King *et al.* 2004, Modi *et al.* 2007), none found an association of patient–provider race-concordance with outcomes in a variety of settings such as, appropriate assessment and diagnosis of medical conditions (McKinlay *et al.* 2002, Tai-Seale *et al.* 2005, Zayas *et al.* 2005), receipt of primary care services (Stevens *et al.* 2003, Stevens *et al.* 2005) or time spent during medical visit (Malat 2001). Although, Modi *et al.* found a positive association of race-concordance to provision of more aggressive treatment in patients with advanced dementia, this procedure may not particularly improve outcomes in this patient population (Modi *et al.* 2007).

Only two studies in the category of ‘utilization of healthcare’ found a positive association between patient–provider race-concordance and utilization of health services (Table 3). Patients in race-concordant relationships had lower missed appointment rates and were more likely to make their scheduled provider appointments (Murray-Garcia *et al.* 2001, Lasser *et al.* 2005).

Of note, about half the studies in both ‘provision’ (Malat 2001, Stevens *et al.* 2003, Stevens *et al.* 2005) and ‘utilization’ (Saha *et al.* 1999, LaVeist *et al.* 2003, Saha *et al.* 2003, Konrad

et al. 2005) domains were based on patients' (or parents in case of children) self-reports and did not include an objective measure of healthcare provision or utilization.

No clear pattern of findings emerged in the categories of 'patient-provider communication', 'satisfaction', and 'perception of respect', although they trended toward a positive association (Table 3). While a pattern of positive findings emerged in the category of patient satisfaction with provider of same race, three of these five studies were based on a single data source, that is, the 1994 Commonwealth Minority Health Survey, and employed non-mutually exclusive samples and outcomes (Saha *et al.* 1999, LaVeist and Carroll 2002, LaVeist and Nuru-Jeter 2002).

Similarly, three of the four studies of 'patient preference' for a race-concordant provider presented mixed findings. In one study, African-American males and females, and Spanish-speaking Latinos preferred providers of the same race and perceived that concordant relationships are important for quality of care, while Spanish-speaking Latinas did not hold this preference (Garcia *et al.* 2003). In two other studies the majority of the participants held no preference for a race-concordant provider relationship (Schnittker and Liang 2006, Bender 2007) even when they had a physician of the same race or ethnicity (Schnittker and Liang 2006).

In many studies, factors other than race-concordance such as, primary language (Clark *et al.* 2004), educational-concordance (Brown *et al.* 2007), site where care was received (Lasser *et al.* 2005), how well physician knew patient (Clark *et al.* 2004) and sustained relationship with provider (Konrad *et al.* 2005, Stevens *et al.* 2005) were more important predictors of patient outcomes.

Surprisingly, some studies found that race-concordance was associated with worse outcomes for minorities. For instance, Hispanics were more likely to report being treated with disrespect if in a concordant relationship with their providers (Blanchard *et al.* 2007). Further, only half of Blacks and Latinos believed that racism occurred less frequently in race-concordant interactions (Schnittker and Liang 2006). Tai-Seale *et al.* found a significantly lower likelihood of depression assessment among both racial and gender concordant dyads (Tai-Seale *et al.* 2005). The authors speculated that having a shared culture may possibly discourage detection and discussion of certain medical problems including mood and depression.

Discussion

There is inconclusive evidence to support that race-concordance is associated with desirable outcomes for minorities. Only nine of the 27 studies reviewed found support for race-concordance. Even among these, some found only modest effect of race-concordance on outcomes (Lasser *et al.* 2005) and others (Saha *et al.* 2000, LaVeist and Carroll 2002, LaVeist and Nuru-Jeter 2002) were conducted using a single data source and did not have mutually exclusive respondent groups and outcomes. Notwithstanding the limitations of the body of literature and current analysis, the predominant finding in the category of healthcare provision suggests that having a provider of the same race does not particularly improve receipt of services for minorities. The studies under healthcare provision were heterogeneous with regard to outcomes and methods. Further, about half of the studies in both 'provision' and 'utilization' categories were based on patients' self-report. While self-report is appropriate for some outcomes, such as patients' preference and satisfaction, it may not be reliable for some other outcomes. Studies comparing agreement between self-report versus medical records for healthcare provision and utilization have found that reports of under or over utilization occur by individuals' health status (Gladon *et al.* 1992), type of

service (Glandon *et al.* 1992; Lubeck and Hubert 2005), and frequency of service used (Glandon *et al.* 1992). A recent study of health service utilization among marginalized population found poor agreement for ambulatory visits and laboratory tests performed and poor to fair agreement for medication use (Cunningham *et al.* 2007). Future studies may appropriately use an objective measure of health provision and utilization.

Interestingly, there are inconclusive results in minority patients' preference, satisfaction, and communication domains. While there were only a small number of studies in each of these categories, studies of mixed findings raise concerns about either lack of power to detect true effect of race-concordance or true heterogeneity in the effect of race-concordance among subsets of minorities. For instance, the literature indicating mixed findings in the preference for racial/ethnic concordance may present a scenario where racial/ethnic alliance may be important only to a segment of population, possibly reflecting intra-group diversity in their expectations of healthcare providers and the treatments that they prescribe.

In some studies, race-concordance was associated with minority patients' outcomes in combination with other factors such as language, length of patient-provider relationship or site of care. These findings suggest that race-concordance may be a heterogeneous construct and may stand as a proxy for a more complex dynamic embodying a combination of many patient, provider and system variables. This view of concordance allows future studies to carefully consider interactions of race-concordance with other patient, provider and setting-level variables critical to a more nuanced examination of this concept.

A number of factors ought to be considered in evaluating the relevance of the concept of patient-provider race-concordance within the US healthcare context. First, the issue of race/ethnicity is complex on several levels, and the existing research does not appear to capture these complexities. Invariably, the studies were limited to only four racial/ethnic groups: Whites, Blacks, Hispanics and Asians, with Whites and Blacks representing over two-thirds of the patient and provider samples. The US Census Bureau collects data on six racial categories including: (1) White; (2) Black or African American; (3) American Indian/Alaska Native; (4) Asian; (5) Native Hawaiian/Pacific Islander; and (6) Some other race (US Census Bureau 2001). 'Race' and 'Hispanic origin' represent two separate concepts, as Hispanics may belong to any of the six racial categories or to multiple races (US Census Bureau 2000). This distinction was missing in a number of studies analyzed.

In the last US Census held in 2000, the Census Bureau, for the first time, permitted marking of 'more than one race' to capture an increasing number of people who identify themselves as multiracial: 6.8 million people identified themselves as belonging to more than one race; of these, 11.5% were both White and Black, 12.7% were both White and Asian, and 32.3% reported being White and 'Some other race' (US Census Bureau 2001). Sixty-three possible race combinations exist for the six basic racial categories and 57 categories for those who report two or more races (US Census Bureau 2000). Thus, it is not clear how the racial/ethnic concordance literature may relate to minorities who are biracial or multiracial.

Finally, the underlying assumption of the racial/ethnic concordance literature is that patients and providers are able to identify with people of similar race/ethnicity who may look like them or share similar language or culture. This approach undermines the vast heterogeneity that exists *within* some racial groups. For instance, the 'Asian' category in the US census includes subcategories ranging from Koreans to Asian Indians. These so-called 'Asian' subcultures are as removed from each other as any other major racial groups, thus raising a question about the relevance of the concept of concordance to the subsets of minorities.

Further, the race-concordance literature should also be evaluated in the light of limitations pertaining to minority providers. First, a majority of the studies in this review was conducted

with the *physician* providers, thus limiting understanding of the implications of race-concordance concept for other health providers, for example, nurse practitioners, who increasingly manage patients in a variety of healthcare settings. Further, about half the studies did not include a provider sample as they relied on patients' self-report and perceptions about providers of same versus different race/ethnicity. Even among the studies that included a provider sample, minority providers were particularly low, possibly due to the serious shortage of minority health providers in the US health system. While Hispanics, non-Hispanic African Americans and American Indians represent over 27% of the US population (US Census Bureau 2007), less than 9% of nurses, 6% of physicians, and 5% of dentists are from these racial/ethnic groups (Sullivan 2004). The level of minorities in the workplace is expected to decrease due to the low levels of underrepresented minorities enrolled in health professional schools (Sullivan 2004).

The issue of newly migrant health professionals further complicates the issue of race-concordance. The American Association of Medical Colleges estimate that 5% of immigrants have entered medical schools and a majority of these physicians will remain in the USA permanently after graduation (AAMC 2005). About 14% of nurses and 20% of physicians in the USA are from foreign countries (Brush *et al.* 2004, AAMC 2005). It is expected that with the current workforce shortage, the majority of current vacancies are more likely be filled by foreign nurses and physicians. This introduces the issue of generational congruence in the debate of racial/ethnic concordance. For instance, would the race-concordance concept be relevant for patients and providers with racial concordance but generational discordance and differences in the levels of acculturations?

On a normative level, the problem with the concept of race-concordance is that it can potentially create a perception that only the providers of same race or ethnicity are best suited to provide appropriate or effective healthcare. Race is, after all, a social construct. Focusing on race-concordance could potentially create a racially segregated healthcare system and may perpetuate stereotypes and generalizations about how certain minority groups ought to be treated. Thus, it is imperative that the findings of race-concordance literature and future efforts be examined in the light of the above normative risks including a racially segregated health delivery system. It may be argued that increasing diversity in the healthcare professions is a laudable goal and should be pursued regardless of the tangible ends it may serve.

The authors are unaware of any prior comprehensive reviews on this topic. Nevertheless, this review has several limitations. The data analysis was limited to tabular and text format due to heterogeneity in methods and outcomes between studies as well as smaller numbers of studies within each outcome category. A meta-analysis may be conducted as data accumulates on the topic. Because this review was limited to tabular and descriptive analysis, qualitative studies were not excluded. Due to the nature of qualitative research, these studies typically had small sample sizes. Thus, median sample and range are reported for the pooled sample for each minority group. Future studies undertaking a meta-analysis may appropriately exclude qualitative studies or use synthesis technique appropriate to qualitative data. While two authors independently categorized studies and compared findings, the results of this review may be confounded by how studies were assigned to individual outcome category. Finally, this analysis included only published studies.

Many gaps remain in our understanding of if, why, and how patient-provider race-concordance may influence minority patients' outcomes, what health outcomes may be more sensitive to cultural proximity between patients and providers, and what patient, provider and setting-level variables may mediate or moderate these outcomes? These questions can guide researchers whose goals are to understand and dismantle health inequalities among

many racial/ethnic minority populations. There is also a need to evaluate the concept of race-concordance while considering the limitations of this body of research, normative risks, and practical realities of the minority workforce in the US health care system.

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Figure 1.
Results of literature review and search criteria.

Table 1

Study characteristics and major findings ($n = 27$)

Citation	Aims	Sample characteristics	Design/Setting	Major findings	Limitations
Studies supporting race-concordance hypothesis ($n = 9$)					
Cooper <i>et al.</i> (2003)	Does race-concordance affect patient-physician communication and patients' ratings of physicians' participatory decision making?	Patients ($N = 252$) <ul style="list-style-type: none"> Whites = 110 (44%) African Americans = 142 (56%) Physicians ($N = 31$) <ul style="list-style-type: none"> Whites = 13 (42%) African Americans = 18 (58%) 	Cohort study of pre and post-visit follow-up surveys and audiotaped analysis from 16 urban primary care practices in the Baltimore, MD and Washington DC area.	Patients in ethnic-concordant encounters had longer and more meaningful visits, had higher coder rating for positive affect, and had higher patient ratings for satisfaction and positive judgments of their physician's participatory decision-making style.	<ul style="list-style-type: none"> Small physician sample. Limited statistical power to detect differences in speech speed, patient centered interviewing and physicians' positive affect.
Cooper-Patrick <i>et al.</i> (1999)	What is the association between race and gender concordance or discordance in the patient-physician relationship and participatory decision making?	Patients ($N = 1816$) <ul style="list-style-type: none"> Whites = 784 (43%) African Americans = 814 (45%) Hispanics = 218 (12%) Physicians ($N = 64$) <ul style="list-style-type: none"> Whites = 36 (56%) African Americans = 16 (25%) Hispanics = 2 (3%) Asians = 10 (15%) 	Telephone survey conducted between 1996 and 1998 of adults who had attended one of the 32 primary care practices in an urban, primary care setting in Washington, DC area.	Patients in race-concordant relationships with their physicians rated their visits as significantly more participatory than patients in race-discordant relationships.	<ul style="list-style-type: none"> Small sample of minority physicians. Data based on patient self-report. Data may be confounded by physician or practice-related variables not included in the study.
King <i>et al.</i> (2004)	Does race-concordance explain why African Americans are less likely than Whites to receive antiretroviral treatment?	Patients ($N = 1241$) <ul style="list-style-type: none"> White – White = 803 (61%) African American patients-White providers = 341 (32%) African American-African American = 86 (6%) White patients-African American provider = 11 (<1%) 	Secondary analysis of data from 1996 HIV Cost and Service Utilization Study – a national probability, prospective cohort study of adults receiving HIV-related medical care and their providers.	African-American patients with white providers received protease inhibitors significantly later than African Americans with African American providers and White patients with White providers.	<ul style="list-style-type: none"> Relied on self-reported dates for the receipt of protease inhibitor. Not enough patients to allow both races cared for by same provider. Small sample for African American providers.

Citation	Aims	Sample characteristics	Design/Setting	Major findings	Limitations
		Providers (N = 287) <ul style="list-style-type: none">Racial breakdown not provided.			
Lasser <i>et al.</i> (2005)	Are patients less likely to miss appointment when their primary care provider is of the same race?	N = 13,882 <ul style="list-style-type: none">White–White = 7399 (53.3%)Black–Black = 514 (3.7%)Asian–Asian = 28 (<1%)Race discordant = 5941 (42.8%) Primary Care Providers (N = 58) <ul style="list-style-type: none">Whites = 50 (86%)Blacks = 3 (5%)Asians = 3 (5%)Others = 2 (3%)	Survey of primary care physicians at 16 primary care centers within the Cambridge Health Alliance and analysis of primary care patient visit to these providers during 2002.	Race-concordance between patients and providers had only modest effect on missed appointment rates when compared to other factors such as site of care.	<ul style="list-style-type: none">Possible misclassification of staff-assigned patient race.Lower number of minority patient–provider dyads.
LaVeist and Nunn-Jeter (2002)	Is patient—provider race-concordance associated with patient satisfaction with their physicians?	Patients (N = 2720) <ul style="list-style-type: none">Whites = 910 (33%)Blacks = 745 (27%)Hispanics = 676 (25%)Asian Americans = 389 (15%)	Secondary analysis of 1994 Commonwealth Minority Health Survey within the 48 contiguous states of the USA.	Patients who had a choice in the selection of their providers were more likely to be race-concordant. Among each racial/ethnic groups, patients who were race-concordant reported greater satisfaction with their physicians.	<ul style="list-style-type: none">Patients’ self-report of provider race.Several doctor–patient combinations had 15 or fewer respondents; estimates for these categories may not be reliable.
LaVeist and Carroll (2002)	Do African American patients express greater satisfaction with their care when they have an African American physician?	Patients <ul style="list-style-type: none">Blacks = 745 (100%)	Secondary analysis of 1994 Commonwealth Minority Health survey within the 48 contiguous states of the USA.	African Americans who had a choice in the selection of their providers were more likely to be race-concordant. Patients who were race-concordant reported higher levels of satisfaction with care when compared to African-Americans in race discordant relationship.	<ul style="list-style-type: none">Data were based on patients’ self-report including report of provider’s race.The available data does not explain why blacks chose to be in race-concordant relationships with their providers; does not address issues related to quality of care and utilization of medical services.
Modi <i>et al.</i> (2007)	Whether physicians recommend percutaneous endoscopic gastrostomy (PEG) more for African	Physicians (N = 981) <ul style="list-style-type: none">Caucasians = 840 (85.6%)	Cross-sectional mailed survey of physicians in family medicine and internal medicine who	African American physicians were more likely to recommend PEG tube placement for African American patients with advanced	<ul style="list-style-type: none">Hypothetical clinical vignette; may not reflect actual service patterns.

Citation	Aims	Sample characteristics	Design/Setting	Major findings	Limitations
Murray-Garcia <i>et al.</i> (2001)	American than Caucasian patients and what patient-physician characteristics are related to recommendation for PEG tube placement?	<ul style="list-style-type: none"> African Americans = 60 (6.1%) Asians = 81 (8.3%) 	were active members of the North Carolina Medical Society as of May 2004.	<p>dementia than for Caucasian patients even after controlling for several covariates.</p>	<ul style="list-style-type: none"> Small number of African American physicians. Did not control for number of patients with PEG tubes provider had cared for.
	What are the effects of racial/ethnic concordance on the service patterns of medical residents and the influence of residents' second language proficiencies on these patterns?	<p>Patient billing records ($N = 13,681$)</p> <ul style="list-style-type: none"> Whites = 680 (5%) African Americans = 8670 (63.4%) Latinos = 2471 (18.1%) Asians = 649 (4.7%) Other = 1211 (8.9%) <p>Physicians ($N = 117$)</p> <ul style="list-style-type: none"> Whites = 51 (44%) African Americans = 18 (15%) Latinos = 13 (11%) Asian/Pacific Islanders = 35 (30%) 	<p>Retrospective analysis of 13,681 patient billing records billing from Northern California pediatric medical center between May 1998 and October 1999.</p>	<p>African American, Asian, and Latino medical residents disproportionately served patients from their own racial/ethnic background. When adjusted for resident's second language proficiency, Latino and Asian patients remained more likely to see Latino and Asian residents.</p>	<ul style="list-style-type: none"> Study of a single institution. Uncertainties about the integrity of the race/ethnicity data. Visit-level data does not indicate the actual primary care provider designated by clients.
Saha <i>et al.</i> (2000)	Whether minority Americans tend to see physicians of their own race as a matter of choice or because minority physicians are more conveniently located within predominantly minority communities?	<p>Patients ($N = 2045$)</p> <ul style="list-style-type: none"> Whites = 858 (41.9%) Blacks = 645 (31.5%) Hispanics = 542 (26.5%) 	<p>Secondary analysis of 1994 Commonwealth Minority Health Survey within the 48 contiguous states of the USA.</p>	<p>Blacks and Hispanics who had a choice in the selection of their provider were more likely to see providers of their own race. This effect remained after controlling for several covariates including the physician's office location.</p>	<ul style="list-style-type: none"> Data based on patients' self-report including report of provider's race and geographical accessibility of physicians.
Studies that did <i>not</i> provide support for race-concordance ($N = 8$)					
Clark <i>et al.</i> (2004)	Is ethnicity and language concordance associated with physician-patient agreement on recommendations for patients' health behaviors?	<p>Patients ($N = 427$)</p> <ul style="list-style-type: none"> Whites = 145 (34%) Non-Whites = 282 (66%) <p>Physicians ($N = 12$)</p> <ul style="list-style-type: none"> Whites = 8 (67%) Non-Whites = 4 (33%) 	<p>Secondary analysis of data from a physician-patient communication study held at the University of New Mexico Health Science Center in 1995.</p>	<p>Patient-physician race-concordance did not have an effect on agreement about change in patient behavior. Other factors (primary language, how well physician knew patient and overall health status) were better predictors of the outcome.</p>	<ul style="list-style-type: none"> Small sample of physicians. Grouped minority patients and providers under 'non-White' category.
McKinlay <i>et al.</i> (2002)	Do characteristics of physicians in combination	Physicians ($N = 128$)	Experimental design with physicians randomly	There was no significant effect of patient and physician attributes	<ul style="list-style-type: none"> Use of hypothetical vignette.

Citation	Aims	Sample characteristics	Design/Setting	Major findings	Limitations
	with attributes of patients affect medical decision making?	<ul style="list-style-type: none"> Whites = 96 (75%) African Americans = 32 (25%) 	selected from family practice and internal medicine from the Northeastern, USA.	(including race) on outcomes, that is, most likely diagnosis, level of certainty, and number of tests likely to be ordered.	<ul style="list-style-type: none"> Order of videos not randomized. Small sample of African American physicians.
Saha <i>et al.</i> (2003)	Do racial differences in patient-physician relationships contribute to disparities in the quality of health care?	Patients (<i>N</i> = 6299) <ul style="list-style-type: none"> Whites = 3488 (55%) African Americans = 1037 (17%) Hispanics = 1153 (18%) Asians = 621 (10%) 	Secondary analysis of data from 2001 Commonwealth Health Care Quality Survey.	Race-concordance was not associated with satisfaction or use of health services for African Americans, Hispanics or Asians. Only 10% of respondents preferred a physician of their own race/ethnicity. In this group, Blacks were least likely and Hispanics were most likely to state such a preference.	<ul style="list-style-type: none"> Data based on patients' self-report. The survey pertained to the last physician seen by the patients, who may not have been their usual health provider.
Sterling <i>et al.</i> (2001)	Does patient-therapist race and sex matching impact on treatment retention and outcome for a sample of people seeking outpatient substance abuse treatment?	Patients (<i>N</i> = 116) <ul style="list-style-type: none"> African Americans = 116 (100%) Physicians (<i>N</i> = 10) <ul style="list-style-type: none"> Whites = 4 (40%) African Americans = 6 (60%) 	Retrospective analysis of data from inner city outpatient substance abuse treatment facility in a large Northeastern US city.	Patient-therapist race matching did not have an effect on treatment retention for people seeking outpatient substance abuse treatment.	<ul style="list-style-type: none"> Small physician sample. Homogenous demographics of people seeking treatment at the facility.
Stevens <i>et al.</i> (2005)	Whether differences exist in the receipt of basic preventative services and family centered care among those with race-concordant, discordant and no regular provider?	Parents surveyed (<i>N</i> = 1,996) <ul style="list-style-type: none"> Whites = 822 (41%) African Americans = 444 (22%) Latinos = 730 (37%) 	Secondary analysis of the 2000 National Survey of Early Childhood Health – a nationally representative survey of parent's reports of aspects of their child's healthcare.	Even after controlling for urban versus non-urban setting, no statistically significant differences by race-concordance found in basic preventative services or family centered care. There was difference in family centeredness by 'regular provider of care' underscoring importance of factors other than race.	<ul style="list-style-type: none"> Data based on parents' report. Small sample for non-urban minorities. Small sample for subgroup analysis for race/ethnicity. Parent report of provider race may not have been precise.
Stevens <i>et al.</i> (2003)	Is patient-provider race/ethnicity concordance associated with parents' reports of primary care experiences of their children?	Parents surveyed (<i>N</i> = 358) <ul style="list-style-type: none"> Whites = 92 (26%) African Americans = 94 (26%) Latinos = 84 (23%) Asian/Pacific Islanders = 88 (25%) 	Random telephone interviews of parents of children ages 5–12 years in one school district in San Bernardino, CA.	Patient-provider race/ethnicity concordance was not associated with parents' reports of primary care experiences of their children.	<ul style="list-style-type: none"> Data based on parents' report. Few African American and Hispanic parents reported having primary care providers of their own race.

Citation	Aims	Sample characteristics	Design/Setting	Major findings	Limitations
Tai-Seale <i>et al.</i> (2005)	Does patient—provider concordance affect primary care physicians' propensity to assess elderly patients for depression?	Patients ($N = 389$) <ul style="list-style-type: none"> Whites = 296 (76%) Blacks = 54 (14%) Others = 39 (10%) Physicians ($N = 33$) <ul style="list-style-type: none"> Whites = 27 (82%) Blacks = 5 (15%) Other = 1 (3%) 	Observational study using videotapes of clinical interactions from an academic medical center in Southwest, a managed care organization, and a private practice in the Midwest.	There was a significantly lower likelihood of depression assessment among both racial and gender concordant dyads.	<ul style="list-style-type: none"> Small sample of minority patients and providers. Cross-sectional data makes it difficult to determine if providers assessed depression in other visits.
Zayas <i>et al.</i> (2005)	Are there differences in diagnoses when new immigrant Hispanic patients without previous psychiatric treatment are evaluated by Spanish-speaking Hispanic psychiatrists and English-speaking non-Hispanic psychiatrists?	Patients ($n = 10$) <ul style="list-style-type: none"> Hispanics = 10 (100%) Providers ($n = 4$) <ul style="list-style-type: none"> Whites = 2 (50%) Hispanics = 2 (50%) 	Diagnoses of psychiatric illness in new immigrant Hispanic patients without previous psychiatric treatment using content analysis of video-tape of patient.	There was no difference between Hispanic and non-Hispanic psychiatrists in diagnosing Hispanic patients for psychiatric illnesses.	<ul style="list-style-type: none"> Small sample size of patients and providers. Diagnosis via videotape of patient. Exclusion of an objective diagnostic measure.
Studies with mixed findings ($N = 10$)					
Bender (2007)	To what extent adult dental patients have a preference for the race and gender of their student dentist?	Patients ($N = 120$) <ul style="list-style-type: none"> Caucasians = 30 (25%) African Americans = 30 (25%) Hispanics = 30 (25%) Asians = 30 (25%) 	Experimental design with adult dental patients recruited from a private dental school clinic in Northern California and randomly assigned to a treatment condition offering a choice between two equally qualified fictitious dental students varying on race.	Over 50% of participants had no preference for the race of their student dentist, but some black and Hispanic patients preferred a racially concordant student dentist. Hispanic females were especially likely to prefer racially concordant student dentist.	<ul style="list-style-type: none"> Use of hypothetical vignette. Data collected in a single dental school clinic. Small sample within racial groups. American Indian/Alaska Natives, limited English speakers, and bi-racial subjects were excluded.
Blanchard <i>et al.</i> (2007)	Are minority patients in racially concordant relationships with providers less likely than those in non-concordant relationships to perceive disrespect and unfair treatment in their healthcare facilities?	Patients ($N = 6066$) <ul style="list-style-type: none"> Whites = 3367 (73.8%) Blacks = 1016 (11.9%) Hispanics = 1088 (10.5%) Asians = 595 (3.8%) 	Secondary analysis of data from the 2001 Commonwealth Fund Quality of Care telephone survey of adults in the continental USA, and who reported having a regular provider or a usual source of care.	Patients' perceptions of healthcare relationships may partially depend on racial concordance. Hispanics were more likely to report being treated with disrespect if in a concordant relationship. Asians were less likely to report being treated unfairly in a racially concordant relationship.	<ul style="list-style-type: none"> Data based on patients' self-report. Small sample of minority patients reporting a regular provider; relatively small numbers of minorities in racially concordant relationships.
Brown <i>et al.</i> (2007)	Is race-concordance associated with how pediatricians and parents	Patients ($n = 38$) <ul style="list-style-type: none"> Whites = 31 (81.5%) 	Data from 28 pediatric medical encounters occurring in a large	Patient-centeredness was not associated with race and gender concordance but was associated with education concordance.	<ul style="list-style-type: none"> Small sample size of patients and providers.

Citation	Aims	Sample characteristics	Design/Setting	Major findings	Limitations
	communicate in medical encounters?	<ul style="list-style-type: none"> African Americans = 2 (5.2%) Hispanics/Latinos = 4 (10.5%) Other = 1 (2.6%) Providers (<i>n</i> = 21) <ul style="list-style-type: none"> Whites = 19 (90.5%) Asians/Pacific Islander = 2 (9.5%) 	southeastern metropolitan city during 2003.	However, providers and patient laughed more and felt more comfortable in race-concordant relationships.	<ul style="list-style-type: none"> Use of providers from private practice only.
Garcia <i>et al.</i> (2003)	Do patients prefer race/ethnically concordant providers and does concordance affect perceptions of quality of care?	Patients (<i>N</i> = 49) <ul style="list-style-type: none"> Whites = 14 (29%) African Americans = 11 (22%) Latinos (English proficient) = 12 (24.5%) Latinos (non-English proficient) = 12 (24.5%) 	Qualitative focus group interviews of patients in the ambulatory care clinics at the University of California	African American men and women and Spanish speaking Latino men reported a preference for ethnic-concordant primary care providers. Spanish-speaking Latinas dismissed the importance of ethnic-concordance but expressed strong preference for language-concordance.	<ul style="list-style-type: none"> Small qualitative sample. The data represent beliefs and attitudes that may or may not correlate with the focus group participants' actual actions and behaviors.
Gordon <i>et al.</i> (2006)	Is race-concordance associated with doctor's information-giving in lung cancer consultations?	Patients (<i>N</i> = 137) <ul style="list-style-type: none"> Whites = 107 (78%) African Americans = 30 (22%) Providers (<i>N</i> = 10) <ul style="list-style-type: none"> Whites = 8 (80%) African Americans = 2 (20%) 	Audiotaped doctor-patient consultation data from a large southern Veterans Affairs Medical Center.	Racial discordance did not predict information-giving after controlling for patient participation. However, sub analysis of information-giving that was 'prompted by the patient' found that patients in racially concordant consultations received more information-giving statements from their doctor, even after controlling for several covariates.	<ul style="list-style-type: none"> Small sample of physicians and African American patients. Data limited to one setting.
Konrad <i>et al.</i> (2005)	Does physician-patient race-concordance affect hypertension diagnosis and medication use in white and African American elderly patients?	Patients (<i>N</i> = 3367) <ul style="list-style-type: none"> Whites = 1533 (45%) African Americans = 1834 (55%) 	Secondary analysis of in home interviews conducted with elderly persons in one southern state in 1987 and 1990.	African Americans using public sources of care used medications more often if their physician was African American; whereas African Americans who switched physicians were more likely to use medications if their new physician was white.	<ul style="list-style-type: none"> Data based on patients' self-report. Excluded non-physician providers.
LaVeist <i>et al.</i> (2003)	Does doctor-patient race-concordance lead to a greater likelihood of use of health services?	Patients (<i>N</i> = 2720) <ul style="list-style-type: none"> Whites = 910 (33%) Blacks = 745 (27%) 	Secondary analysis of 1994 Commonwealth Minority Health Survey within the 48 contiguous states of the USA.	Patients with regular providers of same race/ethnicity had lower odds of failing to use the needed health services and were less likely to delay seeking care. While pattern of findings was consistent	<ul style="list-style-type: none"> Patients' self-report of provider race and use of health services.

Citation	Aims	Sample characteristics	Design/Setting	Major findings	Limitations
Malat (2001)	Is racial concordance with health care provider associated with perceived respect shown by the providers and time spent during medical visits?	<ul style="list-style-type: none"> Hispanics = 676 (25%) Asian Americans = 389 (15%) 	<p>Patients (N = 1140)</p> <ul style="list-style-type: none"> Whites = 520 (45.6%) African Americans = 586 (51.4%) Other = 34 (3%) 	<p>Secondary analysis of Detroit Area Study of population 18 years and older residing in the tri-county Detroit metropolitan area in 1995.</p> <p>Having a provider of same race accounted for higher rating of 'respect' shown by their healthcare providers but did not account for rating of 'enough time spent' with them by their providers.</p>	<ul style="list-style-type: none"> Lack of adequate control for variations in needed health services and access to care. Data based on patients' self-report. Sample drawn from a single metropolitan city.
Saha <i>et al.</i> (1999)	Whether racial concordance between patients and physicians affects patients' satisfaction with and use of health care?	<p>Patients (N = 2201)</p> <ul style="list-style-type: none"> Whites = 881 (40%) Blacks = 696 (32%) Hispanics = 624 (28%) 	<p>Secondary analysis of 1994 Commonwealth Minority Health Survey within the 48 contiguous states of the USA.</p>	<p>Black patients with black physicians were more satisfied with their physicians and reported use of preventive care during the previous year. Hispanics in race-concordant relationship were satisfied with their health care but not with their physicians.</p>	<ul style="list-style-type: none"> Patients' self-report of provider race and use of health services. Asian respondents were excluded. Satisfaction dichotomized between highest rating and all other ratings. Lack of adequate control for variations in health services and access to care.
Schnittker and Liang (2006)	Is race-concordance associated with Black and Latino patients' preference for a race-concordant physician and their perception of respect?	<p>Patients (N = 2172)</p> <ul style="list-style-type: none"> Blacks = 1189 (54.7%) Latinos = 983 (45.3%) 	<p>Secondary analysis of the Kaiser Family Foundation Survey of Race, Ethnicity, and Medical Care: Public Perceptions and Experiences, 1999.</p>	<p>Few Blacks and Latinos preferred a race-concordant physician even when patients had a physician of the same race. Almost half of blacks and Latinos believed that racism occurred less frequently in race-concordant interactions.</p>	<ul style="list-style-type: none"> Data based on patients' self-report. Results limited to blacks, and Latinos; other ethnicities were excluded. No clear definition of racism was provided or how it was measured.

Table 2

Pooled sample characteristics by racial/ethnic groups (N = 27)^a

	N	%	Median (n)	Range	
				Minimum (n)	Maximum (n)
Patient sample (N = 56,276) ^b					
White/Caucasian	21,142	37.6	600	14	7399
Black/African Americans	17,755	31.5	444	2	8670
Hispanics/Latino	7471	13.3	447	4	2471
Asian/Pacific Islanders	2400	4.3	389	28	649
Others	7508	13.3	161	1	5941
Provider sample (N = 1756) ^c					
White/Caucasian	1154	78.6	23	2	840
Black/African Americans	160	10.9	16	2	60
Hispanics/Latino	17	1.2	2	2	13
Asian/Pacific Islanders	131	8.9	10	2	81
Others	7	0.5	2	1	4

^a In studies where concordance was a sub-aim, only sample employed for concordance analysis is included in the sample calculation.

^b Includes patients or data units pertaining to patients (e.g., patients' medical records).

^c Provider race breakdown not available for one study (n = 287) (King *et al.* 2004). Sample calculation by providers' race/ethnicity conducted excluding this group (n = 1469).

Table 3Studies grouped according to the outcome categories and support for race-concordance ($n = 27$)

Category	Specific race-concordance outcome studied	Support for race-concordance?
Provision of healthcare ($n = 8$)		
King <i>et al.</i> (2004)	Time to receipt of protease inhibitor in HIV-positive patients	+
Malat (2001) ^a	Rating of time spent during last medical visit	–
McKinlay <i>et al.</i> (2002)	Diagnosis of depression and polymyalgia rheumatica, level of certainty, and test ordering	–
Modi <i>et al.</i> (2007)	Recommendations for percutaneous endoscopic gastrostomy in patients with advanced dementia	+
Stevens <i>et al.</i> (2003)	Parents' report of primary care experiences of their children	–
Stevens <i>et al.</i> (2005)	Receipt of basic preventative services or family centered care	–
Tai-Seale <i>et al.</i> (2005)	Assessment of depression in elderly	–
Zayas <i>et al.</i> (2005)	Diagnoses of psychiatric illness	–
Utilization of healthcare ($n = 7$)		
Konrad <i>et al.</i> (2005)	Use of antihypertensive medications	+/-
Lasser <i>et al.</i> (2005)	Missed appointment rates in primary care	+
LaVeist <i>et al.</i> (2003)	Failure to use needed care and delay in using needed care	+/-
Murray-Garcia <i>et al.</i> (2001)	Visits made to race-concordant residents	+
Saha <i>et al.</i> (1999)	Use of preventive care and needed health services	+/-
Saha <i>et al.</i> (2003) ^a	Use of basic healthcare services	–
Sterling <i>et al.</i> (2001)	Retention in outpatient substance abuse treatment	–
Patient-provider communication ($n = 5$)		
Brown <i>et al.</i> (2007)	Pediatrician-parent communication patterns in medical encounters	+/-
Clark <i>et al.</i> (2004)	Physician-patient agreement on change in behavior (diet, exercise, medication, smoking, stress and weight).	–
Cooper-Patrick <i>et al.</i> (1999)	Patient-provider participatory decision-making	+
Cooper <i>et al.</i> (2003) ^a	Patient-centered communication	+
Gordon <i>et al.</i> (2006)	Doctors' information-giving in lung cancer consultations	+/-
Patient satisfaction ($n = 5$)		
Cooper <i>et al.</i> (2003) ^a	Satisfaction and rating of care	+
LaVeist and Nuru-Jeter (2002)	Patient satisfaction with provider of same race	+
LaVeist and Carroll (2002)	Patient satisfaction with provider of same race	+
Saha <i>et al.</i> (1999)	Patient satisfaction with provider of same race	+/-
Saha <i>et al.</i> (2003) ^a	Patient satisfaction with healthcare	–
Patient preference ($n = 4$)		
Bender (2007)	Patient preference for student dentist of same race	+/-
Garcia <i>et al.</i> (2003)	Patient preference for healthcare provider of same race	+/-
Saha <i>et al.</i> (2000)	Patient preference for physician of their own race	+
Schnittker and Liang (2006) ^a	Patient preference for healthcare provider of same race	+/-
Perception of respect ($n = 3$)		

Category	Specific race-concordance outcome studied	Support for race-concordance?
Blanchard <i>et al.</i> (2007)	Perception of disrespect and unfair treatment in healthcare setting	+/-
Malat (2001) ^a	Rating of doctor for treating with dignity and respect	+
Schnittker and Liang (2006) ^a	Perception of racism in race-concordant patient-provider relationship	+/-

Note: + = study found support for patient-provider race-concordance; - = studies did *not* find support for race-concordance; +/- = studies found support for race-concordance in only subsets of minorities studied; findings (+, -, +/-) pertain to concordance outcomes in minority patients.

^aStudy evaluated more than one outcome and appears under more than one category.