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SOCIAL AND ECONOMIC DIMENSIONS OF AN AGING POPULATION

**Ethnicity and Health: An Analysis of Physical
Health Differences across Twenty-one
Ethnocultural Groups in Canada**

Steven Prus and Zhiqui Lin

SEDAP Research Paper No. 143

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November 2005

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Ethnicity and Health: An Analysis of Physical Health Differences across Twenty-one Ethnocultural Groups in Canada

Steven Prus and Zhiqiu Lin

Abstract:

The study of health differences across a wide-range of ethnic, racial, and cultural groups has received relatively little attention in the literature. Twenty-one ethnocultural groups are examined in the current study, providing one of the most comprehensive analyses to-date on ethnicity and physical health in Canada.

Two specific research questions are addressed. First, what is the extent of ethnocultural-based health inequalities in Canada? Second, do ethnocultural differences in health reflect differences in social structural and health-related behavioural environments? These questions are analyzed using the master datafile of the 2000/2001 Canadian Community Health Survey (n=129,588). Three global measures of physical health are used: self-rated health, functional health, and activity restriction.

The results show that certain ethnic and cultural groups experience higher health status compared to other ethnocultural groups. Social structural (i.e., socio-demographic and SES factors) and behavioural (alcohol and cigarette consumption, diet/nutrition, and exercise) control variables are also introduced to determine if these factors mediate the relationship between ethnicity/race and health. These findings show that health differences between ethnic and racial groups are partly attributable to structural and behavioural factors. They also show that the mediating effects of these variables vary across ethnocultural groups, and that social structural factors are generally more important than behavioural ones in explaining ethnocultural-based differences in health.

The implications of the study findings for future research on ethnicity and health and for health care policies are discussed.

Keywords: ethnicity; race; self-rated health; functional health; social structure; lifestyle.

JEL Classification: I10, I18

Résumé:

L'étude des différences d'état de santé entre groupes ethniques, raciaux, et culturels a reçu relativement peu d'attention dans la littérature. Cet essai analyse vingt et un groupes ethno-culturels, faisant de ce dernier l'analyse la plus complète à ce jour de la relation entre l'appartenance ethnique et la santé physique au Canada.

Deux questions spécifiques de recherche sont examinées. D'abord, quelle est l'ampleur des inégalités ethno-culturelles de santé au Canada? Ensuite, ces différences ethno-culturelles reflètent-elles des différences de position dans la structure sociale et de comportements en rapport avec la santé et liés au milieu? Ces questions sont analysées à partir des fichiers de l'Enquête 2000/2001 sur la Santé dans les Collectivités Canadiennes (n=129,588). Nous considérons trois mesures globales de la santé physique: l'état de santé auto-évalué, la santé fonctionnelle, et la limitation des activités.

Nos résultats montrent que certains groupes ethniques et culturels jouissent d'un meilleur état de santé comparé à d'autres groupes ethno-culturels. Des variables de contrôle liées aux différences de position sociale (facteurs de statut socio-économique et socio-démographique) et aux comportements (consommation d'alcool et de cigarette, diététique, et exercice) sont également considérées pour déterminer si ces dernières jouent un rôle intermédiaire dans la relation entre appartenance ethnique/race et santé. Ces résultats démontrent que les différences de santé entre les groupes ethniques et raciaux sont partiellement attribuables à des facteurs structurels et comportementaux. Ils montrent également que les effets intermédiaires de ces variables varient en fonction des groupes ethno-culturels, et que les facteurs socio-structurels expliquent davantage les différences ethno-culturelles de santé que les facteurs comportementaux.

Les implications des résultats de cette étude sur les orientations futures des recherches sur l'appartenance ethnique et la santé ainsi que pour les politiques de santé publique sont discutées.

INTRODUCTION

Most Canadian studies on ethnic- and race-based health differences provide comparisons between aggregate groups, such as Aboriginals and non-Aboriginals, immigrants and non-immigrants, and visible and non-visible minorities. Aboriginal populations, who have experienced an extensive history of discrimination, poverty, and marginalization, are among the most disadvantaged groups in health in Canada. The prevalence of all self-reported major chronic diseases is significantly higher amongst Aboriginal people than in the general population, and it appears to be increasing (Young et al., 1999). Aboriginal populations also have higher rates of mortality and lower life expectancy (Trovato, 2001).

Recent immigrants to Canada, on the other hand, tend to be healthier than Canadian-born persons. Further, about 80 per cent of recent immigrants are visible minorities (defined as persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour), with China (including Hong Kong), India, Pakistan, the Philippines, Korea, Iran, Romania, and Sri Lanka being the leading source countries of immigrants (Citizenship and Immigration Canada, 2002). Thus, this healthy immigrant effect contributes to health differences between ethnic and racial groups in Canada.

Chen and his colleagues (1996a), for example, find that newer immigrants to Canada are less likely than the Canadian-born population to have chronic conditions and disabilities, and that this effect is strongest for those from non-European countries. Perez (2002) and Ali (2002) draw a similar conclusion. Perez (2002) compares the physical health (heart disease, diabetes, high blood pressure, and cancer) of immigrants with that of Canadian-born persons, while Ali (2002) focuses on variations in mental health

(depression and substance abuse). Both studies observe lower rates of morbidity among immigrant populations, namely new/recent immigrants. Most other related research, using a number of different measures of health such as self-rated health, dependency, and life expectancy, also finds evidence of the healthy immigrant effect (Chen, et al., 1996b; Chen, et al., 1995; Dunn and Dyck, 2000; Hyman, 2001; Meadows et al., 2001; Newbold and Danforth, 2003; Parakulam et al., 1992).

Socio-demographic and socio-economic status (SES) factors partly contribute to variations in health among immigrants -- healthier, younger, and better educated individuals self-select into the immigration process, and health requirements in the Immigration Act for entrance into Canada tend to disqualify people with serious medical conditions (Oxman-Martinez, et al., 2000; Trovato, 1998). Recent immigrants also tend to have more positive health-related beliefs, attitudes, and lifestyle behaviours, such as better diets and lower rates of smoking and alcohol consumption (Perez, 2002). However, longer-term immigrants are not as healthy as newly arrived immigrants due to deterioration in their health over time, which is attributed to the adoption of mainstream (Canadian) beliefs and lifestyle behaviours by immigrants (Ali, 2002; Chen, et al., 1996a; Dunn and Dyck, 2000; Hull, 1979; Perez, 2002).

Differences in health between groups defined by specific country of origin have also been observed in Canada. Wang et., al (2000) find that the risk for arthritis is significantly lower among Asian immigrants compared to North American-born Canadians, even after adjusting for age, gender, socio-economic variables, and body mass index. Acharya (1998) also finds differences in mental health status and in its predictors

by country of birth. These studies suggest that both immigrant status and country of birth influence health.

Ethnocultural-based differences in health are also documented. In a study of cardiovascular and cancer mortality among European, South Asian, and Chinese Canadians from 1979 to 1993, Sheth and his colleagues (1997; 1999) conclude that there are significant differences in the rates of death from heart disease and cancer by ethnic group. South Asians and whites have higher rates of death from heart disease compared to Chinese persons, while cancer-related mortality is much higher for Chinese and whites. Their findings also indicate however, that there is a notable decline and convergence in mortality rates for heart disease and stroke for the three groups. O'Loughlin (1999), in a commentary on ethnicity and chronic disease, points out that this result is evidence that existing inequalities between ethnic groups are narrowing, and that due to the rapidity with which these health patterns are changing, two of the key contributing factors may be lifestyle and environment.

Research on health differences across a wide-range of ethnic, racial, and cultural groups, however, is nearly non-existent in the Canadian literature, with the exception of a study by Wu and his colleagues (2003). They find that East and Southeast Asian, Chinese, South Asian, and black populations experience the lowest rates of depression in Canada. Wu et. al., (2003) also point out that SES and social support are the main factors in explaining ethnocultural differences in mental health. SES is important since it mediates the relationship between race/ethnicity and health. SES, in turn, is important because it influences well-known determinants of mental health such as access/utilization of healthcare services, physical environment (e.g., housing), and chronic stress.

Ethnocultural-based variations in mental health may further reflect differences in social support (i.e., someone to confide in and get advice and acceptance from) obtained from family and friends. These differences may stem from the fact that some cultures emphasize community and/or family orientations.

RESEARCH QUESTIONS AND HYPOTHESES

Nearly all Canadian studies on ethnicity and health use aggregate groupings, in part because of restrictions placed in public-use microdata and/or because of sample size. Hence, the current study provides a unique perspective by using a large sample to examine differences in physical health exist across a large number of ethnic, cultural, and racial (what is collectively termed in this paper as ethnocultural) groups. In this regard, the first, primary research question asks ‘what is the extent of ethnocultural-based health inequalities in the Canadian context?’

The second, related research question asks ‘do ethnocultural differences in health reflect differences in social structural and health-related behavioural environments?’ Specifically, as described above, two general explanations of ethnocultural-based health inequalities are found in the literature – a social structural and a health-related behavioural explanation. Ethnic and racial differences in health, according to the social structural hypothesis, are accounted for by differences in well-known socio-demographic (e.g., age, gender, and family structures) and SES (e.g., education, income, occupation) determinants of health. That is, ethnicity per se does not influence health, but it is various social structural forces associated with being a member of an ethnocultural group that influences health. In the same manner, the behavioural hypothesis postulates that ethnocultural health inequalities are accounted for by differences in lifestyle: health status

is related to lifestyle factors such as smoking, alcohol abuse, physical inactivity, and diet (e.g., consumption of processed foods) and obesity, and patterns in these health-related behaviours vary by race and ethnicity. These hypotheses are tested here to determine if social structural and/or behavioural factors mediate the relationship between ethnicity/race and health.

DATA AND METHODS

Data Ethnocultural differences in health are estimated with data from the master file of 2000/2001 Canadian Community Health Survey (CCHS) – an on-going, cross-sectional survey that collects information on the health status, health care utilization, and health determinants of a representative sample of Canadians aged 12 or older living in private households. As opposed to the CCHS public-use microdata file, the master file used here contains data in virtually original form (e.g., data have not been reduced or re-organized). Since ethnic and racial categories have not been collapsed in the CCHS master file, coupled with its large sample size (131,535 cases), it is possible to compare health status across a wide-range of ethnic and racial groups using these data.

The CCHS sampling design can cause problems with estimation of variances in conventional tests of statistical significance. Sample weights, which were adjusted to sum to sample size, are used in all data analyses here to account for unequal probabilities of selection as a result of the multistage sampling design employed in the CCHS. While the stratification and clustering components of the CCHS sampling design are not corrected by this procedure, it does provide a more reliable estimate of variance by adjusting for the unequal probabilities of selection. This is the standard approach for most research using Statistics Canada microdata files.

Measurement This study is interested in the cultural, racial, and ethnic aspects of health status in the general Canadian population (i.e., the study population). A single, comprehensive measure of culture, race, and ethnicity (what is termed here as ethnocultural origin) is used in the current study. It is based on two questions, and contains twenty-one ethnocultural categories as shown in Table 1, which are arranged under three headings: White, Asian, and All Others. The first question asks, “People living in Canada come from many different cultural and racial backgrounds. Are you: ...White (i.e., non-visible minority), Black, Korean, Filipino, Japanese, Chinese, Aboriginal, South Asian (e.g., East Indian, Pakistani, Sri Lankan), Southeast Asian (e.g., Cambodian, Indonesian, Laotian, Vietnamese), Arab, West Asian (e.g., Afghan, Iranian), Latin American, Other visible-minority, or Multiple (i.e., multiple visible-minority) origin?” Given that a substantial majority of respondents are classified as “white,” this group is further divided based on eight ethnic origins (i.e., the ethnic group which the respondent’s ancestors belonged to): Canadian, French, English, Other West European, South or East European, Jewish, Multiple ethnic (i.e., two or more of Canadian, French, English, Other West European, South/East European, Jewish), and Other White (e.g., white and nonwhite). Analyses show that most persons who answer “Canadian” are largely of Canadian-born European-origin (namely English and French) (Boyd, 1999; Pendakur and Mata, 2000).

To provide a measure of global or overall physical health (as opposed to a specific health condition/problem), and a more complete understanding of the ethnic/racial aspects of health, health is measured on a subject level and on a more objective one. Subjective or self-rated health (SRH) is based on the question “In general, would you say

your health is: excellent, very good, good, fair, or poor?” It can be assumed that SRH is an indicator of how an individual perceives his/her overall physical health. Researchers often collapse SRH into two logical, divergent groups: “positive” health perception (good, very good, or excellent) and “negative” health perception (poor or fair). This study also uses this approach.

Two more objective measures of global physical health status are also used. Together, they provide a rather objective measure of overall functional limitations and disabilities, and are often considered broad measures of individual health. First is the Health Utilities Index Mark 3 (HUI). The HUI is an index of an individual's overall functional health based on eight self-reported attributes: vision, hearing, speech, mobility, dexterity, cognition, emotion, and pain/discomfort. Respondents are asked up to several questions per attribute about their usual abilities or day-to-day health. These attributes are weighted and organized into a single numerical value using a multi-attribute utility theory, based on preference measures for health states derived from an Ontario, Canada community sample survey.

Values, which reflect health utilities, range from about 0 (i.e., utility of being dead or completely unfunctional) to 1 (i.e., utility of being healthy or perfect functional health) in increments of 0.001 (Furlong et al., 2001.). For example, a respondent who is near-sighted, yet fully healthy on the other seven attributes, receives a score of 0.973 or 97.3% of full health. More generally speaking, an HUI score of 0.80 or greater indicates very good health while scores below 0.80 indicate moderate or severe functional health problems. Relatedly, differences of greater than 0.03 between HUI scores are deemed to be unconditionally (clinically) important and meaningful, and differences between 0.01-

0.03 may be important in various situations (Drummond, 2001; Feeny et al., 2002; Grootendorst et al., 2000; Schultz & Kopec, 2003). The entire HUI module for the CCHS questionnaire is available at: <http://www.statcan.ca/english/concepts/health/pdf/hui.pdf>, and more information on the development and methodology of the HUI is found at: <http://www.healthutilities.com> or <http://www.fhs.mcmaster.ca/hug>.

The second objective measure examines health limitations that may affect one's daily activities. Activity restriction (AR) (or disability) refers to the need for help – as a result of any health problem/condition, including a disability or handicap, that has lasted 6+ months – with instrumental activities of daily living such as preparing meals, shopping for groceries or other necessities, doing everyday housework, doing heavy household chores, and personal care (washing, dressing or eating, or moving about inside the house).

In terms of the control variables, a full range of social structural and behavioural factors are included in this study. Social structural control variables consist of both socio-demographic and SES factors. The socio-demographic controls are sex, age in years (as well as age-square to control for an accelerated decline in health with age), living arrangement (unattached, single parent, married with children, married only, or other), mother tongue (English/French or other), and length of time in Canada since immigration (less than 10 years, 10 plus years, or Canadian-born). SES is measured with years of education, occupation (management, professional, technologist, administration/finances, sales/services, trades/transportation, farming/forestry/fishing, manufacturing, other, or not in the labour force), and a per capita income measure, which is based on total annual

household income (before taxes and deductions) and the number of persons in the household.

Various health behaviours are also measured in the current study. First, two measures of alcohol consumption are used: sum of the number of drinks consumed on all days in the week prior to the CCHS interview and type of drinker (regular, occasional, former, or never). Second, the quantity and quality of cigarette smoking are also measured: number of years smoked and type of smoker (daily, former daily-now occasional, former daily, occasional, former occasional, or never). Fruit and vegetable consumption (i.e., the average number of times per day fruits and vegetables are consumed) is the third health-related behaviour gauged in this study. Fourth, the Body Mass Index (BMI) is used, and is collapsed into 4 conventional groups: insufficient weight (BMI <20), acceptable weight (BMI 20-24.9), somewhat overweight (BMI 25-27), or overweight (BMI >27). Finally, level of physical activity is used in the analysis, and has three categories: inactive, moderately active, and active.

Some variables in the CCHS have missing cases. While the number of these cases is relatively small for each variable used in the analysis, two methods are used to include all missing data in the analysis (with the exception of the ethnocultural origin variable, where missing cases were simply deleted from the analysis) in order to keep a full and less biased sample. First, a dummy variable for missing cases in categorical variables is created. Second, missing data in a continuous variable are replaced with the mean score (for the entire sample) of that variable.

Analysis Logistic regression analysis is used to estimate the odds of reporting positive SRH (Table 3) and of reporting an AR (Table 4) for each ethnocultural group

relative to those of Canadian ethnocultural origin, the chosen reference group. (This category is selected as the reference in the analyses since it is the largest single [i.e., non-multiple] ethnocultural group in Canada). Linear (OLS) regression analysis is used to estimate differences in mean HUI score for each group relative to those of Canadian origin (Table 2).

Four regression models are computed for each health dependent variable. The first model (Model 1) includes only the ethnocultural variable, and describes the actual (bivariate) differences in health between ethnocultural groups; that is, it provides an answer to the first research question stated above in the Research Questions section.

The second (Model 2) and third (Model 3) models introduce social structural (S) and behavioural (B) control variables, respectively. (Given the large number of control and dummy variables introduced in the analyses, their associated coefficients are not shown in the tables to save space). This estimates the extent to which the findings in the first model (Model 1) are independently influenced by social structural factors (i.e., a test the social structural hypothesis) and by lifestyle factors (i.e., a test the behavioural hypothesis); hence, they provide an answer to the second research question stated in the Research Questions section. The extent to which the relationship between ethnocultural origin and health is mediated by structural and lifestyle factors is estimated by the changes in the coefficients for ethnocultural groups before and after controlling for these factors. (The fourth model [Model 4] simultaneously introduces social structural and lifestyle controls, and shows any combined effects of these factors).

It must be noted that tests of statistical significance produced in regression programs can be influenced by various factors external to the size of the observed

difference, such as the estimated variance, the chosen reference group, and sample size. In terms of sample size, it is sometimes difficult to argue that statistically significant findings reveal something meaningful about observed differences since even trivial differences become significant statistically when using a very large sample like the CCHS. This becomes more apparent when units of scale become very small such as the HUI scale. The question then arises of how large must these differences be to be “substantively” significant? As mentioned above, differences of greater than 0.01 for HUI scores are deemed to be important. This study also considers differences to be more meaningful if they are generally replicated across all measures of health (HUI, SRH, and AR).

RESULTS

Descriptions of Ethnocultural Health Differences (First Research Question) Table 1 provides an overview of the Canadian population aged 12 and over by ethnocultural origin and health status. The two largest ethnocultural groups are multiple-white and Canadian. About 15 per cent of Canadians are members of visibly minority groups and Aboriginals – a substantial increase from 1971 when fewer than 4 per cent of Canadians were of non-European origins. Visibly minority groups also generally have better health than non-visibly minority groups.

(Table 1 about here)

Tables 2-4 elaborate on these findings, and present regression analyses of HUI, SRH, and AR respectively. The first column (Model 1) in each of these tables duplicates the data in Table 1, but shows the actual difference in mean HUI score (Table 2) and in

the odds of having a positive SRH (Table 3) and an AR (Table 4) between the given ethnocultural group and those of Canadian origin (i.e., the reference group).

The unadjusted coefficients (first column/Model 1) in Table 2 show that Filipino, Latin, and Black populations, respectively, report significantly higher HUI scores compared to those of Canadian ethnic origin. The odds of reporting positive SRH are also significantly higher for Filipino as well as Arab persons (first column of Table 3). The likelihood of having an activity restriction is generally lowest for Asian and other populations: Filipino, Korean, Chinese, Southeast Asian, Black, and Latin (first column of Table 4). Persons of Japanese origin also have a much higher incidence of positive SRH and a lower likelihood of having an activity restriction compared to the Canadian ethnic population; however, these findings are only "marginally" statistically significant at $p < 0.1$ in part reflecting a relatively small sample size.

At the other end of the health spectrum, non-visible minorities and Aboriginal groups generally have poorer health. Those of Aboriginal and of all other white ethnic descent (with the exception of French) have the lowest rates of functional health (HUI) compared to those of Canadian origin, as well as the lowest odds of reporting positive SRH and the highest odds of having an activity restriction among the ethnocultural groups observed in this study. This is especially the case for Aboriginal, Jewish, and South/East European populations, but less so for persons of English, French, West European, and Other and Multiple white ethnocultural origin who have health status that is more similar to persons of Canadian descent.

Explanations of Ethnocultural Health Differences (Second Research Question) The results in the next three columns (Models 2-4) of Tables 2-4 test the social structural and

behavioural hypotheses of ethnocultural differences in health. The second column (Model 2) shows ethnocultural health differences adjusted for only demographic/SES factors. This estimates the extent to which the findings in the first model are independently influenced by social structural factors (i.e., tests the social structure hypothesis). The extent to which the relationship between ethnocultural origin and health is mediated by social structure is estimated by the changes (reductions) in the coefficients for ethnocultural groups before (Model 1) and after (Model 2) controlling for these factors. The findings in the third column (Model 3) are adjusted for only lifestyles, and estimate the extent to which the findings in the first model (Model 1) are independently influenced by lifestyle factors (i.e., tests the lifestyle hypothesis). The fourth column shows ethnocultural differences in health after all factors are simultaneously taken into account, and estimates any combined effects of these factors. The coefficients associated with the control variables are not shown in the tables to save space.

These findings do provide support for these hypotheses, especially the social structural hypothesis. This support is also contingent on the ethnocultural group being examined. In support of the social structural hypothesis, the health of persons of Filipino, Korean, and Southeast Asian origins tends to become more similar to that of persons of Canadian origin when the data are adjusted for social structural factors only. The relative health advantage of persons of Black and Latin ethnocultural origins can also be explained by differences in namely social structural environments. Social structural factors also help to account for the relative health disadvantages of those of English and French ethnic descent.

However, the gap in average HUI score and likelihood of reporting positive self-rated health between Aboriginals and those of Canadian origin is substantially reduced when the data are adjusted for both social structural and behavioural factors. Aboriginals still have a significantly lower average HUI score and lower odds of reporting positive health, yet the combined influence of structural and behavioural forces accounts for a considerable amount of these inequalities in health. The gap in overall functional health (HUI) between persons of Aboriginal and Canadian descent is almost cut in half from 0.056 before structural and behavioural controls are taken into consideration to 0.032 after these factors are introduced, and while the odds of reporting positive self-rated health for those of Aboriginal descent are only 0.564 times those of persons of Canadian origin before controls, this ratio is narrowed to 0.672 after controls.

By contrast, neither structural nor behavioural factors have a considerable influence on the health differences between persons of Canadian origin and those of Jewish, South/East European, West European, and Other and Multiple white ethnocultural origin – they still have on average significantly lower scores on all three measures of health compared to those of Canadian origin after controlling for differences in structural and behavioural environments.

The data also reveal unexpected and interesting findings. The impact of structural and behavioural factors on the health of South Asian and of West Asians is generally the reverse of what it is for the other Asian groups. The previously suppressed differences in health between South Asians and Canadians and between West Asians and Canadians become statistically significant when these factors are controlled. Social structural factors particularly suppress health differences between West Asians and Canadians. After

controlling for social structural differences, West Asians now have a significantly lower average HUI score (-0.021, $p < 0.05$) and a higher risk of disability (O.R. 1.654, $p < 0.01$). Health differences between South Asians and Canadians are suppressed, however, by a combination of structural and behavioural factors. After introducing these factors, South Asians now have an average HUI score that is -0.018 ($p < 0.01$) lower than that of Canadians, and the odds of reporting positive health and the odds of having a disability are now 0.724 ($p < 0.01$) and 1.654 ($p < 0.01$) times those of persons of Canadian origin.

(Tables 2-4 about here)

CONCLUSION

It has been known for sometime that Canadian society is structured along ethnocultural lines. The ethnic dimension of inequality in Canada was first systemically studied and highlighted by John Porter (1965). Based on national data for the period 1931-1961, he found evidence of an ethnically-ranked system in terms of occupations, income, “ethnic prestige,” and entry into the Canadian elite with those of British origins coming out on top; French Canadians were second; persons of other European origins followed - with Western and Northern European origins ranking higher than Southern and Eastern European origins; and Blacks and Aboriginals - very small groups numerically – were at the bottom of the hierarchy.

Many significant events and policy changes have occurred since the time covered by Porter’s research. Important among these include: continued non-racist improvements in Canadian immigration policy; the establishment of the Canadian Charter of Rights and Freedoms; the institutionalization of Multiculturalism as a federal policy; the civil rights and women’s movements; the Employment Equity Act (which targets women, visible

minorities, Aboriginals, and persons with disabilities); increasing awareness and acknowledgement of the injustices wrought on Aboriginal Canadians and nascent developments aimed at meeting their needs (Frideres, 2000); and, last but not least, research revealing that biologically-based race (and racial difference) is not scientifically valid. These changes bode well for a Canadian society in which race and ethnicity are less significant as a principle of social organization and as a determinant of individual life chances. However, research shows that ethnocultural differences continue to exist.

In terms of health, most Canadian research provides comparisons between aggregate groups of race, ethnicity, and culture such as Aboriginal and visible minority versus non-visibility minority, foreign-born versus Canadian-born, and Anglophone and Francophone versus Allophone. This study provides a unique perspective by comparing a wide range of ethnocultural groups. At a general level, the findings are consistent with existing literature on this topic -- visible minorities generally have a physical health advantage. However, when a wide selection of ethnocultural groups is compared the data show that not all visible minority groups share this advantage; some of these groups are considerably healthier (e.g., Filipino, Japanese, Korean, Black, Latin) than others.

The current study also introduces social structural and behavioural control variables to determine if these factors mediate the relationship between ethnicity/race and physical health. The findings lend support to the argument that health differences between ethnic and racial groups are partly attributable to structural and behavioural environments. They also show that the mediating effects of these variables vary across ethnocultural groups (they explain away much the health advantage of visible minorities groups such as Filipino, Black, and Latin, but account for less of the health disadvantage

experienced by non-visible minorities such as Jewish and South/East European ethnic groups), and that social structural factors are generally more important than behavioural ones in explaining ethnocultural-based differences in health.

A direct implication of these findings is that ethnocultural differences in health must be considered in any comprehensive Canadian health care policy and program planning initiatives. Health care policy should address the fact that select groups with relative high health status will have fewer and different needs for services and programs, while others with lower health status may have increased needs and should be appropriately targeted for services.

Limitations Since ethnocultural patterns in physical health continue to exist with social structural and behavioural controls in the analysis, it begs the question of what other factors may explain these patterns. It is possible that psychosocial forces such as ethnic identity, social support, self-control, self-esteem, which are not generally measured in the CCHS, mediate the relationship between ethnicity/race and health (Wu et al., 2003). These factors may also interact with ethnicity/race to influence health (Noh et al., 1999). More research, and the appropriate data, is needed on what controls/explanatory variables might further account for ethnocultural differences in health. Long-term longitudinal health data, which are not generally available in Canada, would also allow this research to determine how the ethnicity-health relationship changes over the life course, especially given that health-related behaviours change within certain ethnocultural groups (e.g., recent immigrants) with time.

Cultural adherence to traditional values and beliefs may also influence an individual's willingness to report health problems (Ali 2002; Kopec et al., 2001), as there

may be differences in their fundamental concepts of health and illness (Saldov, 1991). The extent to which cultural and language differences in the Canadian population influence the interpretation and reporting of health problems is not well known. The magnitude of the differences in health status between ethnocultural groups reported in the results here make it unlikely that cultural factors exclusively may explain these results. Nonetheless, research on ethnicity and health must be aware of this potential challenge.

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Table 1: Average HUI scores and Percentage with Positive SRH and Having an AR by Ethnoculture

Ethnoculture	HUI	SRH	AR	n
<u>White</u>				
Canadian	.88873	89.0%	11.6%	16,734 (12.7%)
English	.87013	87.7	15.5	9,955 (7.6)
French	.88619	87.7	13.8	8,918, (6.8)
Jewish	.84725	79.6	18.7	778 (.6)
South/East European	.85677	83.3	16.1	7,797 (5.9)
West European	.87215	87.0	14.1	13,714 (10.4)
Other-white	.87235	87.9	14.0	11,981 (9.1)
Multiple-white	.87611	88.9	13.9	41,003 (31.2)
<u>Asian</u>				
Chinese	.88747	88.7	8.6	4,302 (3.3)
Filipino	.91955	91.6	4.6	1,082 (.8)
Japanese	.89629	91.7	9.0	298 (.2)
Korean	.88715	90.9	8.3	471 (.4)
South Asian	.88330	88.8	12.6	3,526 (2.7)
Southeast Asian	.88753	89.2	9.0	940 (.7)
West Asian	.87170	90.8	13.4	353 (.3)
<u>All Others</u>				
Aboriginal	.83245	82.0	15.1	1,384 (1.1)
Arab	.86485	92.4	11.9	707 (.5)
Black	.89843	89.3	9.8	2,163 (1.6)
Latin	.90476	90.1	8.0	868 (.7)
Multiple-race/culture	.87129	90.1	10.7	1,032 (.8)
Other-visible minority	.87944	90.6	10.4	1,584 (1.2)
Total/Average	.87700	88.1	13.4	129,588 (100%)

Table 2: Metric (unstandardized) OLS coefficients for HUI by Ethnoculture, before and after Social Structural (S) and Behavioural (B) controls.

Ethnoculture	Before Controls (Model 1)	After S Controls (Model 2)	After B Controls (Model 3)	After SB Controls (Model 4)
<u>White</u>				
English	-.019**	-.011**	-.019**	-.013**
French	-.003	.003	-.004	.001
Jewish	-.041**	-.041**	-.047**	-.044**
South/East European	-.032**	-.026**	-.035**	-.027**
West European	-.017**	-.014**	-.017**	-.015**
Other-white	-.016**	-.019**	-.020**	-.020**
Multiple-white	-.013**	-.016**	-.016**	-.018**
<u>Asian</u>				
Chinese	-.001	-.004	-.006	-.005
Filipino	.031**	.009	.025**	.010
Japanese	.008	.016	.005	.016
Korean	-.002	-.015	-.008	-.012
South Asian	-.005	-.014**	-.012**	-.018**
South East Asian	-.001	-.006	-.002	-.006
West Asian	-.017	-.021*	-.015	-.019*
<u>All Others</u>				
Aboriginal	-.056**	-.043**	-.045**	-.032**
Arab	-.024**	-.032**	-.023**	-.026**
Black	.010*	.005	.002	.002
Latin	.016*	.012	.013*	.014*
Multiple-race/culture	-.017**	-.028**	-.024**	-.028**
Other-visible minority	-.009	-.017**	-.016**	-.017**
(Constant)	(.889)	(.807)	(.897)	(.687)

Statistically different from the reference group (Canadian) at: * $p < 0.05$, ** $p < 0.01$

Table 3: Odds Ratio coefficients for Positive SRH by Ethnoculture, before and after Social Structural (S) and Behavioural (B) controls.

Ethnoculture	Before Controls (Model 1)	After S Controls (Model 2)	After B Controls (Model 3)	After SB Controls (Model 4)
<u>White</u>				
English	.887**	.965	.913*	.965
French	.883**	.992	.874**	.960
Jewish	.484**	.394**	.423**	.354**
South/East European	.617**	.673**	.567**	.641**
West European	.829**	.841**	.823**	.828**
Other-white	.902**	.838**	.842**	.821**
Multiple-white	.993	.901**	.938*	.878**
<u>Asian</u>				
Chinese	.974	.798**	.807**	.756**
Filipino	1.353**	.772*	1.116	.804
Japanese	1.375	1.415	1.343	1.395
Korean	1.228	.808	1.056	.813
South Asian	.986	.745**	.843**	.724**
South East Asian	1.026	.811	.920	.800
West Asian	1.224	1.056	1.202	1.070
<u>All Others</u>				
Aboriginal	.564**	.583**	.612**	.672**
Arab	1.485*	1.205	1.455**	1.477*
Black	1.038	.857	.883	.829*
Latin	1.133	1.006	1.004	.991
Multiple-race/culture	1.128	.829	.975	.825
Other-visible minority	1.197*	.985	1.051	1.004
(Constant)	(8.069)	(10.875)	(10.314)	(3.194)

Statistically different from the reference group (Canadian) at: * $p < 0.05$, ** $p < 0.01$

Table 4: Odds Ratio coefficients for Having an AR by Ethnoculture, before and after Social Structural (S) and Behavioural (B) controls.

Ethnoculture	Before Controls (Model 1)	After S Controls (Model 2)	After B Controls (Model 3)	After SB Controls (Model 4)
<u>White</u>				
English	1.404**	1.098*	1.358**	1.109*
French	1.221**	1.097*	1.245**	1.128**
Jewish	1.759**	1.479**	1.661**	1.553**
South/East European	1.460**	1.277**	1.507**	1.316**
West European	1.251**	1.102*	1.251**	1.127**
Other-white	1.245**	1.276**	1.320**	1.307**
Multiple-white	1.233**	1.333**	1.335**	1.376**
<u>Asian</u>				
Chinese	.721**	.831*	.783**	.869
Filipino	.370**	.564**	.419**	.511**
Japanese	.759	.488**	.713	.476**
Korean	.684*	1.038	.778	1.048
South Asian	1.100	1.656**	1.212**	1.654**
South East Asian	.759*	1.150	.811	1.161
West Asian	1.186	1.654**	1.196	1.669**
<u>All Others</u>				
Aboriginal	1.359**	1.664**	1.462**	1.483**
Arab	1.031	1.702**	1.162	1.469**
Black	.833*	1.128	.894	1.105
Latin	.655**	.862	.729*	.882
Multiple-race/culture	.911	1.396**	1.078	1.421**
Other-visible minority	.889	1.194	.996	1.141
(Constant)	(.131)	(.174)	(.048)	(.597)

Statistically different from the reference group (Canadian) at: * $p < 0.05$, ** $p < 0.01$

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