Individual and Neighbourhood Determinants of Health Care Utilization

Implications for Health Policy and Resource Allocation

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ABSTRACT

Objectives: To investigate the importance of both individual and neighbourhood socioeconomic characteristics for health care utilization.

Methods: Various linkage procedures generated a longitudinal dataset with information on 2,116 Nova Scotians, their residential neighbourhoods, 8 years of health care utilization and vital status. Unilevel and multilevel regression analyses were employed to examine the effects of both individual and neighbourhood characteristics on health care use.

Results: Individual income and education determined physician and hospital use. Also, neighbourhood characteristics, specifically average income and percentage of single mother families, were found to determine health care use. When considering individual and neighbourhood characteristics simultaneously, individual income and education determined physician and hospital use independently, while neighbourhood income determined physician use independently.

Conclusions: Both individual and neighbourhood socioeconomic characteristics determine health care use. Acknowledging this allows better targeting of health policy and planning, and enables more accurate needs-based resource allocation.

La traduction du résumé se trouve à la fin de l'article.

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The relationship between socioeconomic status (SES) and health is well established; wealthy, more highly educated individuals experience better health and lower mortality than those who are less well off. This relationship is commonly examined using SES measures for individuals such as individual income and educational achievement. In instances where information on individuals has been unavailable, SES measures for areas – such as average neighbourhood income – have been used as proxies for the former. Recently, however, investigators have reported that area characteristics in themselves determine health.¹⁻⁴ Multilevel analytic methods distinguish individual and area effects⁵⁻⁸ and have demonstrated that area characteristics affect health independently of individual characteristics.⁹⁻¹² For example, various income groups in states with high income inequality had higher mortality rates than their income equivalents in states with low income inequality.¹² Such relationships between income inequality and health have been demonstrated to be different for the U.S. and Canada.¹³ Our own recent work, using a sample from the province of Nova Scotia, showed that neighbourhood effects are substantially smaller than in the U.S. but also that individual socioeconomic characteristics are more important for health in rich neighbourhoods than in poor neighbourhoods.¹⁴

If the relationship between SES and health is complex and “multilevel”, then it is reasonable to expect that the relationship between SES and health care needs and use will be likewise. Better understanding of this relationship will benefit health policy, planning, and needs-based resource allocation.¹ To date multilevel approaches have not yet been applied to the examination of SES and its effects on health care needs and use. Existing resource allocation models use socioeconomic characteristics to estimate health care needs.¹⁵⁻¹⁹ These usually employ area data as a proxy for unavailable information on individuals. If health care use is determined by a combination of individual and neighbourhood effects, one should be critical regarding the accuracy of these resource allocation models.²

Considering the potential implications for public health policy, planning, and needs-based resource allocation, we under-

took the present study to provide better understanding of the importance of both individual and neighbourhood socioeconomic characteristics for health care utilization.

METHODS

Study design and data sources

Addressing the above research question requires information on individuals, their residential neighbourhoods, as well as their health care utilization and vital status. We achieved this by linking various data resources, the details of which have been described elsewhere.¹⁴ The 1990 Nova Scotia Nutrition Survey²⁰ consisted of 2,198 adults, aged 18 to 74 years, from a two-stage cluster sample stratified by region, age, and sex. Individual survey records were linked with the 1991 Canada Census, at the level of enumeration area. Eighty-two records (3.8%) could not be linked and thus were excluded from the statistical analyses. The remaining 2,116 participants were then linked to provincial health care databases and vital statistics to yield health services utilization through December 1998, out-of-province migration, and vital status through December 1999. During the follow-up period, 96 participants migrated out of Nova Scotia and 211 died; their observations, until the date of departure or death, were included in the analyses.

Measures

The survey provided individual information on age, sex, household income, and educational attainment. Data were complete for all characteristics except household income; the 300 (14%) non-responders to this question were included in all statistical analyses as a "missing" category.

Neighbourhood-level socioeconomic factors derived from the Census included average household income, average dwelling value, neighbourhood educational level, unemployment rate, and percentage of single mother families. Neighbourhoods were defined as enumeration areas, which range in population size from 40 to 2,200. Average household income or average dwelling value was suppressed for 98 individuals (4.6%) because of small population size and consequent privacy issues and large variances. For these participants, val-

TABLE 1

Individual and Neighbourhood Characteristics of the 2,116 Study Participants

		n	%
Age (years)	18-34	465	22
	35-49	540	26
	50-64	645	30
	65-74	462	22
Sex	Female	1095	52
	Male	1021	48
Household income	<\$20,000	571	27
	\$20,000-\$40,000	713	34
	≥\$40,000	532	25
	non-response	300	14
Education	< high school	943	44
	High school, vocational	607	29
	Some college, university	566	27
Neighbourhood income	<\$30,000	389	18
	\$30,000-\$45,000	1362	64
	≥\$45,000	365	17
Neighbourhood dwelling value	<\$60,000	733	35
	\$60,000-\$90,000	970	46
	≥\$90,000	413	20
Neighbourhood education	≥20% less than Grade 9	545	26
Unemployment rate	<10%	684	32
	10%-15%	683	32
	≥15%	749	35
% single mother families	≥15%	457	22

ues for these characteristics were imputed from a randomly selected adjacent enumeration area. This procedure has been validated to generate unbiased estimates.¹⁴

Health care utilization included physician and hospital services use. Since the distribution of health services use is skewed, we dichotomized use of physician services as low versus high, using median number of services per year as a cut-off. Hospital use was examined both dichotomously (no hospitalization versus hospitalization), and continuously among those who had been hospitalized (number of hospital days per year).

Statistical analyses

The importance of individual socioeconomic characteristics on health care use and mortality were examined using traditional regression. The combined importance of individual and neighbourhood socioeconomic characteristics was examined using multilevel regression. In this approach, individual-level determinants were treated as first-level covariates, and their effect on health services use and mortality was assumed to be similar across neighbourhood characteristics, which were considered second-level covariates. Cross-level interactions between first- and second-level covariates were examined but did not reveal statistically significant associations and are therefore not presented. All regression models were adjusted for age and sex, as well as death. Death is a confounder in health care use models. It is established

that health care use increases dramatically in the year preceding death.²¹ In order to fully adjust for increased utilization in the last year of life, we included follow-up information on deaths that was one year longer than follow-up information on health care utilization. Logistic regression was applied to the dichotomous outcomes of low versus high physician use, no hospitalization versus hospitalization, and mortality. Linear regression was applied to the continuous outcome of hospital days of care. The resulting β -coefficients of the linear regression analyses were exponentiated to facilitate comparisons with the odds ratios of the logistic regression.

Sample weights are generally applied in the analysis of surveys with stratified sampling. We followed published guidelines²² on accounting for sampling design in the longitudinal analysis of survey data with follow-up information. All analyses adjusted for the variables used in defining sample weights (age, sex, and region), without incorporating the sample weights. As inclusion of region in the models did not substantially change the estimates of interest, it was not retained in the analyses presented here in order to preserve degrees of freedom. Statistical analyses were conducted using Stata²³ and HLM5²⁴ software.

RESULTS

Virtually all participants (98%) consulted a physician at least once over the eight-year follow-up, with a median rate of use

TABLE II

Importance of Individual and Neighbourhood Socioeconomic Characteristics for Health Care Use and Mortality

		Physician Use (high/low)		Hospital Use (yes/no)		Length of Stay (n=1129)		Mortality (yes/no)	
		OR*	95% CI	OR*	95% CI	RR*	95% CI	OR*	95% CI
Household income	<\$20,000	1		1		1		1	
	\$20,000-\$40,000	0.76	0.59-0.97	0.70	0.54-0.91	0.98	0.81-1.18	0.74	0.50-1.10
	≥\$40,000	0.71	0.54-0.94	0.74	0.56-0.98	0.76	0.61-0.95	0.52	0.30-0.89
Education	< high school	1		1		1		1	
	High school, vocational	0.79	0.63-0.99	0.91	0.73-1.15	0.86	0.72-1.03	0.94	0.64-1.38
	Some college, university	0.71	0.56-0.89	0.79	0.63-0.99	0.74	0.61-0.89	0.39	0.24-0.63
Neighbourhood income	<\$30,000	1		1		1		1	
	\$30,000-\$45,000	0.72	0.57-0.92	0.75	0.58-0.97	0.96	0.79-1.18	1.03	0.71-1.49
	≥\$45,000	0.80	0.59-1.09	0.74	0.54-1.02	0.82	0.64-1.04	0.75	0.43-1.31
Neighbourhood dwelling value	<\$60,000	1		1		1		1	
	\$60,000-\$90,000	0.86	0.70-1.06	1.04	0.84-1.28	0.85	0.72-1.00	0.98	0.71-1.35
	≥\$90,000	1.02	0.77-1.36	0.89	0.69-1.15	0.82	0.66-1.01	0.81	0.54-1.22
Neighbourhood education	≥20% less than Grade 9	0.98	0.79-1.22	0.93	0.76-1.15	1.01	0.84-1.21	1.03	0.74-1.45
Unemployment rate	<10%	1		1		1		1	
	10%-15%	1.04	0.82-1.31	0.96	0.77-1.21	1.20	1.00-1.45	1.04	0.73-1.49
	≥15%	1.01	0.80-1.27	0.95	0.75-1.19	1.27	1.06-1.52	0.91	0.63-1.32
% single mother families	<15%	1		1		1		1	
	≥15%	1.36	1.09-1.71	1.45	1.16-1.81	1.18	0.99-1.40	1.06	0.76-1.48

* OR = odds ratio, RR = relative risk, 95% CI = 95% confidence interval

Relative risks are calculated by exponentiation of β -coefficients resulting from linear regression.

Odds ratios and relative risks for mortality are adjusted for age and sex; those for health care use are adjusted for age, sex, and death.

The importance of household income and education is calculated with traditional logistic and linear regression, that of neighbourhood characteristics with multilevel logistic and linear regression.

TABLE III

Independent Importance of Individual and Neighbourhood Socioeconomic Characteristics for Health Care Use

		Physician Use (high/low)		Hospital Use (yes/no)		Length of Stay (n=1129)	
		OR*	95% CI	OR*	95% CI	RR*	95% CI
Neighbourhood income	<\$30,000	1		1		1	
	\$30,000-\$45,000	0.75	0.59-0.96	0.79	0.60-1.03	0.99	0.81-1.21
	≥\$45,000	0.87	0.63-1.20	0.80	0.58-1.10	0.88	0.69-1.13
Household income	<\$20,000	1		1		1	
	\$20,000-\$40,000	0.77	0.60-0.99	0.72	0.56-0.92	1.02	0.83-1.24
	≥\$40,000	0.73	0.55-0.96	0.77	0.59-1.00	0.79	0.64-0.97
Neighbourhood income	<\$30,000	1		1		1	
	\$30,000-\$45,000	0.73	0.57-0.93	0.76	0.58-1.00	0.97	0.79-1.18
	≥\$45,000	0.88	0.64-1.21	0.80	0.58-1.10	0.88	0.69-1.13
Education	< high school	1		1		1	
	High school, vocational	0.78	0.63-0.97	0.91	0.72-1.15	0.84	0.69-1.02
	Some college, university	0.69	0.55-0.86	0.80	0.63-1.01	0.73	0.61-0.88

* OR = odds ratio, RR = relative risk, 95% CI = 95% confidence interval

Relative risks are calculated by exponentiation of β -coefficients resulting from linear regression.

Odds ratios and relative risks are adjusted for age, sex, and death and calculated using multilevel logistic and linear regression.

of 6.8 services per year. Sixty-three percent (n=1324) had at least one hospital admission, with a median length of stay of 1.0 day per year. Table I provides a description of the study sample, giving both individual and neighbourhood characteristics.

Table II presents the effect of individual and neighbourhood socioeconomic characteristics on health care use and mortality. Individual income and education were inversely associated with physician and hospital use and, to a lesser extent, length of stay. These differences were statistically significant. Individual income and education had similar effects on mortality, with an even stronger decrease at the highest levels of SES. Of the neighbourhood determinants, neighbourhood income and per-

centage of single mother families were significantly associated with health care use; more physician and hospital services were used in poorer neighbourhoods and in neighbourhoods with more than 15% single mother families.

Table III presents the effects of individual income and neighbourhood income, simultaneously adjusted for each other and for age, sex, and death. Individual income appeared to be an independent determinant of physician use, hospital use, and length of stay, whereas neighbourhood income independently determined physician use. Table III also presents the independent effects of individual education and neighbourhood income. Education independently determined physician use and

length of stay, whereas neighbourhood income independently determined physician use. Simultaneous adjustment of individual socioeconomic characteristics and percentage of single mother families did not reveal any statistically significant associations of the latter with health care utilization (data not shown).

DISCUSSION

We have demonstrated that socioeconomic factors predict health care use; individuals with low income and little educational achievement use more physician services and are more frequently and longer hospitalized. In addition, independent of individual characteristics, persons living in

poor neighbourhoods use more health care, particularly physician services.

The findings regarding the relationship of individual socioeconomic characteristics with health and health care use are consistent with other Canadian findings. Poorer, less educated individuals experience poorer health and consequently make more frequent visits to general practitioners and use more acute hospital care.²⁵⁻³⁰ Poor lifestyle behaviours including smoking, poor diet, and lack of exercise are more prevalent among lower socioeconomic groups but are only in part responsible for the impaired health in this study population.^{14,31} Poor lifestyle behaviours have been suggested to be enforced by the local neighbourhood culture.^{4,9} Other suggested mechanisms of neighbourhood effects on health and thus health care use include quality of housing, access to resources, and safety.^{11,32,33}

We have employed multilevel methods for health care utilization. The independent importance of individual and neighbourhood characteristics for health care use has been demonstrated and may have important implications for health policy and planning. For example, preventive and intervention programs may be enhanced by targeting both high-risk individuals and high-need neighbourhoods.^{1,3,4} More specifically, in addition to targeting programs to disadvantaged individuals, one may also want to optimize the ratio of family physicians to patient population in disadvantaged neighbourhoods.

The present findings are particularly relevant to the issue of needs-based resource allocation. A number of countries and Canadian provinces have developed allocation models that employ various combinations of geographic measures of health and socioeconomic status.^{19,28} Our findings pertaining to the independent importance of individual and neighbourhood characteristics suggest that the current models should be used with caution. Given their reliance upon only geographical measures, current models will miss the detailed needs of individuals and neighbourhoods. The extent to which this could result in distorted resource allocations cannot be directly derived from the present study but clearly warrants further investigation. This dilemma also underlines the importance of new initiatives such as the Canadian Community Health Survey, which will provide individ-

ual level data with a sufficient sample size to allow provincial and regional analyses.³⁴

The strengths of our study include the longitudinal design, which yields a longer-term pattern of health care use, rather than a "snapshot" when cross-sectional analyses are applied. The advantages of administrative information on health care use, over self-report, are that they are free of recall error and selection bias. Administrative data on health care use, however, may not fully reflect health care needs, which is of primary interest from the perspective of health policy, planning, and resource allocation.^{35,36} In addition, our analyses combined all physician services. Discrimination between family physician and specialist services and between preventive and acute care services could further benefit health policy and planning and should be addressed in future research.

In summary, both individual and neighbourhood socioeconomic characteristics determine health care use. Acknowledging this allows better targeting of health policy and planning and enables more accurate needs-based resource allocation.

REFERENCES

1. Glazier RH, Badley EM, Gilbert JE, Rothman L. The nature of increased hospital use in poor neighbourhoods: Findings from a Canadian inner city. *Can J Public Health* 2000;91:268-73.
2. Geronimus AT, Bound J. Use of census-based aggregate variables to proxy for socioeconomic group: Evidence from national samples. *Am J Epidemiol* 1998;148:475-86.
3. Locker D, Ford J. Using area-based measures of socioeconomic status in dental health services research. *J Public Health Dent* 1996;56:69-75.
4. Rice N, Jones A. Multilevel models and health economics. *Health Economics* 1997;6:561-75.
5. Von Korff M, Koepsell T, Curry S, Diehr P. Multi-level analysis in epidemiologic research on health behaviors and outcomes. *Am J Epidemiol* 1992;135:1077-82.
6. Greenland S. Principles of multilevel modelling. *Int J Epidemiol* 2000;29:158-67.
7. Mackenbach JP. Multilevel ecodemiology and parsimony. *J Epidemiol Community Health* 1998;52:614-15.
8. Austin PC, Goel V, van Walraven C. An introduction to multilevel regression models. *Can J Public Health* 2001;92:150-54.
9. Diez-Roux AV, Nieto FJ, Muntaner C, et al. Neighborhood environments and coronary heart disease: A multilevel analysis. *Am J Epidemiol* 1997;146:48-63.
10. O'Campo P, Xue X, Wang MC, Caughy MO. Neighborhood risk factors for low birthweight in Baltimore: A multilevel analysis. *Am J Public Health* 1997;87:1113-18.
11. Yen IH, Kaplan GA. Neighborhood social environment and risk of death: Multilevel evidence from the Alameda County Study. *Am J Epidemiol* 1999;149:898-907.
12. Lochner K, Pamuk E, Makuc D, et al. State-level income inequality and individual mortality risk: A prospective, multilevel study. *Am J Public Health* 2001;91:385-91.
13. Ross NA, Wolfson MC, Dunn JR, et al. Relation between income inequality and mortality in Canada and in the United States: Cross sectional assessment using census data and vital statistics. *BMJ* 2000;320:898-902.
14. Veugelers PJ, Yip AM, Kephart G. Proximal and contextual socioeconomic determinants of mortality: Multilevel approaches in a setting with universal health care coverage. *Am J Epidemiol* 2001;154:725-32.
15. Carr-Hill R, Eastwood A, Stephenson P. Resource allocation review [letter]. *Lancet* 1988;2(8603):168.
16. Roos NP, Fransoo R, Carrière KC, et al. Needs-based planning: The case of Manitoba. *CMAJ* 1997;157:1215-21.
17. Roos NP, Fransoo R, Bogdanovic B, et al. Needs-based planning for generalist physicians. *Med Care* 1999;37(6 Suppl):S206-28.
18. Sutton M, Lock P. Regional differences in health care delivery: Implications for a national resource allocation formula. *Health Econ* 2000;9:547-59.
19. Hutchison B, Hurley J, Reid R, et al. *Capitation Formulae for Integrated Health Systems: A Policy Synthesis*. Ottawa, Ontario: Canadian Health Services Research Foundation, 2000.
20. Nova Scotia Heart Health Program. *Report of the Nova Scotia Nutrition Survey*. Halifax: Nova Scotia Department of Health, 1993.
21. Roos NP, Shapiro E, Tate R. Does a small minority of elderly account for a majority of health care expenditures?: A sixteen-year perspective. *Milbank Q* 1989;67:347-69.
22. Korn EL, Graubard BI. Epidemiologic studies utilizing surveys: Accounting for the sampling design. *Am J Public Health* 1991;81:1166-73.
23. Stata Corporation. *Intercooled Stata 6.0 for Windows* (computer software). College Station, TX: Stata Corporation, 1999.
24. Scientific Software International Inc. *HLM 5 for Windows* (computer software). Lincolnwood, IL: Scientific Software International Inc., 2000.
25. Kephart G, Thomas VS, MacLean DR. Socioeconomic differences in the use of physician services in Nova Scotia. *Am J Public Health* 1998;88:800-3.
26. Veugelers PJ, Guernsey JR. Health deficiencies in Cape Breton County, Nova Scotia, Canada, 1950-1995. *Epidemiology* 1999;10:495-99.
27. Veugelers PJ, Yip AM, Mo D. The north-south gradient in health: Analytic applications for public health. *Can J Public Health* 2001;92:95-98.
28. Kephart G, Pennock M, Skedgel C, et al. *Federal Funding for Health Care: Are Provinces Getting Their Fair Share?* Halifax, NS: Population Health Research Unit, Dalhousie University, 2000.
29. Johansen H, Millar WJ. Health care services - recent trends. *Health Reports* 1999 Winter;11(3):91-109.
30. Roos NP, Mustard CA. Variation in health and health care use by socioeconomic status in Winnipeg, Canada: Does the system work well? Yes and no. *Milbank Q* 1997;75:89-111.
31. Fitzgerald AL, MacLean DR, Veugelers PJ. Dietary reference intakes: A comparison with the Nova Scotia Nutrition Survey. *Can J Diet Pract Res* Fall or Summer 2002, in press.
32. Bosma H, van de Mheen HD, Borsboom GJJM, Mackenbach JP. Neighborhood socioeconomic status and all-cause mortality. *Am J Epidemiol* 2001;153:363-71.
33. Lynch JW, Kaplan GA, Salonen JT. Why do poor people behave poorly? Variation in adult health behaviours and psychosocial characteristics by stages of the socioeconomic life-course. *Soc Sci Med* 1997;44:809-19.

34. Statistics Canada. *Canadian Community Health Survey Documentation*. Ottawa, 2000.
35. Krasnik A. The concept of equity in health services research. *Scand J Soc Med* 1996;24:2-7.
36. Andersen R, Newman JF. Societal and individual determinants of medical care utilization in the United States. *Milbank Mem Fund Q Health Soc* 1973;51:95-124.

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RÉSUMÉ

Objectif : Étudier l'importance des caractéristiques socio-économiques de particuliers et d'unités de voisinage dans l'utilisation des soins de santé.

Méthode : Par diverses méthodes de couplage, nous avons produit un ensemble de données longitudinales sur 2 116 Néo-Écossais, leurs unités de voisinage, leur statut vital et huit années d'utilisation des soins de santé. À l'aide d'analyses de régression à un et à plusieurs niveaux, nous avons examiné les effets des caractéristiques des particuliers et des unités de voisinage sur l'utilisation des soins de santé.

Résultats : Le revenu et la scolarité des particuliers déterminaient le recours aux médecins et aux hôpitaux. Certaines caractéristiques des unités de voisinage (le revenu moyen et le pourcentage de familles gynoparentales) déterminaient également l'utilisation des soins de santé. Lorsqu'on tient compte simultanément des caractéristiques des particuliers et des unités de voisinage, le revenu personnel et la scolarité déterminaient séparément le recours aux médecins et aux hôpitaux, tandis que le revenu de l'unité de voisinage déterminait séparément le recours aux médecins.

Conclusions : L'utilisation des soins de santé est déterminée par les caractéristiques socio-économiques des particuliers et des unités de voisinage. Sachant cela, on pourra mieux cibler les politiques et la planification dans le domaine de la santé et effectuer avec plus de précision la répartition des ressources selon les besoins.

Coming Events Activités à venir

To be assured of publication in the next issue, announcements should be received by **August 1, 2002** and valid as of **October 31, 2002**. Announcements received after **August 1, 2002** will be inserted as time and space permit.

Pour être publiés dans le prochain numéro, les avis doivent parvenir à la rédaction avant le 1^{er} août 2002 et être valables à compter du 31 octobre 2002. Les avis reçus après le 1^{er} août 2002 seront insérés si le temps et l'espace le permettent.

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