

Validation of Self Reported Race in PROMIS

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Introduction

- Administrative data is frequently used to study clinical outcomes in renal disease, however, these databases are not standardized and key variables require proper validation.
- Race is an important determinant of health outcomes at all stages of kidney disease, but has not been validated in most administrative data and the correlation with census-based definitions of race is unknown.
- Validation of Race in administrative data would allow use of this variable for clinical research

Objectives

- Validation of Self-Reported Race in PROMIS (PROMIS SRR) against gold standard self reported race from patient surveys (Survey SRR)
- Comparison of Self-Reported Race in PROMIS to Canadian Census Categorization of race (Census SRR)

Methods

- Cross sectional telephone surveys of a random sample from PROMIS conducted between February to November 2016.
- Inclusion criteria: adults >18 years of age in the PROMIS database in British Columbia
- Eligible patients were contacted by multilingual trained research coordinators via telephone and consenting patients completed the questionnaire over the telephone in language of their preference
- Responders were asked to select a race category from PROMIS (survey SRR) and a race category from the 2011 Canadian Census (Census SRR)
- When validating the PROMIS SRR, survey SRR was considered the gold-standard.
- PROMIS SRR was then compared to the Census SRR
- Sensitivity (Sn) and specificity (Sp) were calculated with 95% confidence intervals. Positive Predictive Values (PPV) and Negative Predictive Values (NPV) were calculated.
- The analyses were repeated in *a priori* determined subgroups based on age, sex, country of birth other than Canada, and type of renal program (CKD, GN, transplant recipient, PD, HD and living donors)

Results

- 21,039 patients met inclusion criteria, 1,677 were selected for the survey and 637 participated (38% response rate).
- There were no differences between the entire PROMIS population, those selected for and those who responded to the survey.

	All (N=637)	Caucasian (N=404)	East Asian (N=65)	South Asian (N=62)	Filipino (N=20)	Aboriginal (N=19)	P-value
Mean Age (SD)	65(14)	65(13)	66(14)	63(15)	56(11)	63(13)	<0.001
Female (%)	47	47	37	56	65	53	0.180
Household Income (%)							0.036
Less than \$25,000	21	18	28	26	5	32	
\$25,000-49,000	24	24	20	16	40	16	
\$50,000-74,000	16	19	14	15	10	5	
\$75,000-99,000	12	11	14	13	20	5	
Over \$100,000	16	17	12	15	20	21	
Renal Group (%)							<0.001
GN	14	15	17	11	5	16	
CKD	19	18	15	13	5	16	
HD	23	19	22	44	30	46	
PD	11	11	19	10	25	5	
TX	20	22	19	16	15	16	
Live donors	13	15	9	6	20	0	
Residence in Lower Mainland (%)	61	48	90	81	95	40	<0.001
Birth outside Canada (%)	36	18	89	87	100	11	<0.001

Table 1: Characteristics of the patients included in the survey based on PROMIS self-reported race categories.

- PROMIS SRR had an accuracy of 95.3% (CI 94.2-97.0%) when validated against the survey SRR with Sn and Sp $\geq 90\%$ in all race groups, except the Aboriginal group (Table 2)
- The positive and negative predictive values were $\geq 95\%$, except in the low and high prevalence groups, respectively.

PROMIS SRR	Sn (%)	95% CI	Sp (%)	95% CI	PPV (%)	NPV (%)
Filipino	90.5	75.1-99.9	99.8	99.5-100.0	95.0	99.7
South Asian	95.3	91.3-100.0	99.8	98.5-100.0	98.4	99.5
East Asian	96.9	87.1-99.0	99.5	98.7-100.0	95.4	99.7
Caucasian	91.5	94.2-98.1	93.4	89.3-98.8	96.5	84.5
Aboriginal	87.5	48.8-90.9	99.2	97.9-99.6	73.7	99.0
Other	54.8	46.3-65.8	99.3	95.2-99.8	85.2	96.9

Table 2: Sn, Sp, PPV and NPV for each race category in PROMIS (PROMIS SRR) compared to the Survey SRR as the gold standard.

Results

- The Canadian Census had an overall accuracy of Census 95.7% (CI 94.4-97.6%) when validated against PROMIS SRR with Sn and Sp $\geq 90\%$, except in the Caucasian (Table 3)

Census SRR	Sn (%)	95% CI	Sp (%)	95% CI	PPV (%)	NPV (%)
Filipino	95.0	93.3-96.7	99.8	99.5-100.0	95.0	99.8
South Asian	98.0	97.4-99.4	99.3	98.6-99.9	93.8	99.8
East Asian	92.3	90.2-94.3	99.5	98.9-100	95.2	99.1
Caucasian	99.8	99.3-100.0	89.1	86.7-91.5	79.4	99.0
Aboriginal	89.5	87.1-91.8	97.7	96.5-98.8	54.8	99.7
Other	9.1	6.8-11.3	99.8	99.5-100.0	50.0	98.3

Table 3: Sn, Sp, PPV and NPV of Canadian Census categorization (Census SRR) compared to PROMIS SRR.

- Results did not differ in subgroups based on age, sex, birth outside Canada, or renal group (figure 1)

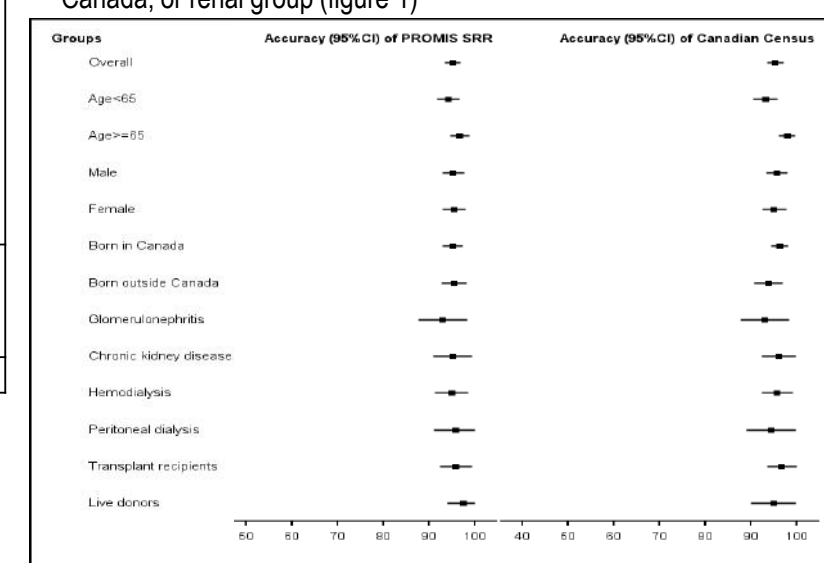


Figure 1: Accuracy of PROMIS and Census SRR for subgroups (age, sex, birth outside of Canada and renal group) with 95% confidence intervals

Conclusions

- There is high overall accuracy of PROMIS SRR that validates its use in the secondary analysis of administrative data for research purposes.
- There is high correlation between PROMIS and census race categories, which allows future research using linkage with other databases that capture census-based definitions of race.