

## **DCAP for ATC 2020– Association of Immigrant Status with Living Donor Kidney Transplant**

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### **Background:**

Living Donor Kidney Transplantation (LDKTs) is the optimal treatment modality of choice for patients with end-stage kidney disease (ESKD). Despite its numerous benefits, LDKT is still underutilized in Canada (CIHI, 2018; deGroot et al., 2013). Although study has demonstrated that immigrants in Ontario were less likely to register for deceased organ and tissue donation than non-immigrants (Garg et al., 2016), minimal existing literature has focused on immigrants' willingness on pursuing LDKT. In general, immigrant patients face challenging postmigration barriers, such as separation from family, cultural and linguistic barriers, and transition to a new environment (Derr A. S., 2016). Particularly, linguistic barriers play a critical role in the initial access of immigrants to transplantation programs since LDKT requires the patients to actively express their interest and to seek for a potential living donor (Derr A. S., 2016). To our knowledge, less attention has been given to the impact of immigrant status on patients' willingness to pursue LDKT despite many barriers (e.g., sex, ethnicity, socio-economy) have already been documented (Wu et al., 2017). The main objective of this cross-sectional study was, therefore, to explore the implication of patients' immigration status on their LDKT pursuit.

### **1. Study Objective/Question**

- Primary Question: We wonder if immigrant status is really a potential barrier among patients to have LDKT identified donor
- Hypothesis: Immigrant patients would be less likely to have at least one potential living donor identified and also have less likely to pursue LDKT, as opposed to non-immigrant patients.

### **2. Study Design**

This is a multi-centre, cross-sectional sample of adults on dialysis from dialysis units in Toronto completed standard, validated questionnaires asking about readiness to explore LDKT, kidney transplant (KT) knowledge and factors influencing their decision about KT

### **3. Study Population**

Participants who answered the questions from Barrier Classical, Barrier Expanded, and ETO were included.

Inclusion criteria:

- Individuals greater than 18 years of age
- Patients with stage 4 or 5 chronic kidney disease (CKD)
- Able to provide informed consent

#### Exclusion criteria

- Physician diagnosis of dementia
- Severe acute illness or condition that hinders questionnaire completion
- Unable to read/understand grade 5 English
- Unwilling to provide informed consent

#### 4. Exposure (independent) Variables

Variable 1 – Immigrant Status : Assessed by question “Are you now or have you ever been a landed immigrant, refugee or been on a work” Categorical variable – Nominal (Binary)

- Yes
- No

Variable 2 – Immigrant Year : Assessed by the difference between question “How old were you arrived in Canada” and “ Date of entry (Year)”. I also categorized this into 3 categories

- Recent Immigrant ( $\leq 9$  years)
- Medium-term Immigrant (between 9 to 20 years)
- Long-term Immigrant (More than 20 years)
- Non-immigrant (Reference Group)

#### 5. Outcome (dependent) Variables

- **Primary Outcome** (Binary variable) – If patients have at least one potential donor identified
  - Yes
  - No
- **Secondary outcome** (Binary variable) – The stage of readiness to pursue LDKT, which is categorized into **two levels** (early/moderate and late). I used a validated question based on the trans-theoretical model of behaviour change. This question was “Given the following options, today, how ready are you to take actions to pursue living donation?”
  - Low Readiness/Moderate: participants who were not considering taking actions to pursue LDKT in the next 6 months (i.e. in the pre-contemplation stage), those who were considering taking actions in the next 6 months (i.e. in the contemplation stage)

- or were preparing to take actions in the next 30 days (i.e. in the preparation stage) as being in *the early/moderate stage* of change
- High Readiness: those taking actions to pursue living donation (i.e. in the action stage) as being in the *late stage* of readiness to pursue LDKT.

## 6. Confounders (8 confounders)

Age, gender, marital status, income, Comorbidity, Day Since Starting Dialysis, education, Ethnicity

## 7. Statistical Analysis (Preliminary Analysis)

- Logistic Regression was used to assess association between Immigrant Status and LDKT readiness Stage (ldkt\_bin1)
- Logistic Regression was used to assess association between Years in Canada and LDKT readiness Stage (ldkt\_bin1)
- Logistic Regression was used to assess association between Immigrant Status and At least one potential donor
- Logistic Regression was used to assess association between Years in Canada and At least one potential donor

## 8. Univariable/Multivariable Analysis

### Primary outcome variable: At least one potential donor (Binary)

- Multivariable Logistic Regression were used to adjust for potential confounding variables
  - Model I: Immigrant Status
  - Model II: Model I + adjusted for age, gender, marital status
  - Model III: Model II + adjusted for self-reported income, education
  - Model IV: Model III + adjusted for CCI (comorbidity), day since dialysis
  - Model V: Model IV + adjusted for ethnicity
- Multivariable Logistic Regression were used to adjust for potential confounding variables
  - Model I: Immigrant Years in Canada
  - Model II: Model I + adjusted for age, gender, marital status
  - Model III: Model II + adjusted for self-reported income, education
  - Model IV: Model III + adjusted for CCI (comorbidity), day since dialysis
  - Model V: Model IV + adjusted for ethnicity

**Secondary outcome variable: Stage of LDKT Readiness (ldkt\_bin1)**

- Multivariable Logistic Regression were used to adjust for potential confounding variables
  - Model I: Immigrant Status
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**9. Combined Analysis**

**Primary outcome variable: At least one potential donor (Binary)**

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  - Model I: Immigrant Status
  - Model II: Model I + adjusted for age, gender, marital status
  - Model III: Model II + adjusted for self-reported income, education
  - Model IV: Model III + adjusted for CCI (comorbidity), day since dialysis
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**Secondary outcome variable: Stage of LDKT Readiness (ldkt\_bin1)**

- Multivariable Logistic Regression were used to adjust for potential confounding variables
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## 10. Results

Data Set: November 26<sup>th</sup>, 2019

N = 545

	Immigrant (N= 279)	Non-Immigrant (N = 215)	P -values
<b>Mean age (SD)</b>	60.2 (13)	52.9 (14)	
<b>Gender (% Male)</b>	171 (61.4%)	137 (63.7%)	P = 0.6
<b>Marital Status (% Married)</b>	147 (53.2%)	109 (50.9%)	P = 0.036
<b>Income</b>			P < 0.001
less than 30 K	107 (55.4%)	54 (31.9%)	
30 K – 70 K	43 (22.3%)	58 (34.3%)	
More than 70 K	43 (22.3%)	57 (33.8%)	
<b>Comorbidity (index &gt; = 3)</b>	160 (63.2%)	112 (60.2%)	P= 0.159
<b>Ethnicity</b>			P < 0.000
White (%)	58 (22.5%)	148 (72.9%)	
Asian (%)	80 (31.0%)	25 (12.3%)	
Black (%)	111 (43.4%)	18 (8.87%)	
Other (%)	8 (3.1%)	12 (5.91%)	
<b>Time since dialysis</b>			
< = 1 year (%)	41 (2.3%)	45 (33.3%)	P = 0.067
1-3 years (%)	67 (38.1%)	50 (37.0%)	
>3 years (%)	68 (38.6%)	40 (29.7%)	
<b>Education (&gt; = 12 years)</b>	145 (53.7%)	136 (65.3%)	P = 0.009