INFLUENCE OF SOCIO-ECONOMIC STATUS (SES) ON RADIOTHERAPY ADVERSE EVENTS

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RATIONALE

Socio-economic status (SES) is known to influence cancer patient outcomes. The purpose of this study is to evaluate whether SES affected the short-term clinical experience of patients treated with radiotherapy (RT) during the pandemic.

METHODS

- Single institution, retrospective cohort quality improvement study (QI 21-0205)
- Primary endpoint: adverse events (AEs) within 90 days of a radiation course
- Unplanned radiation-nursing clinic (RNC) visit
- Emergency department (ED) visit
- Adult patients treated from April 1, 2019 to March 31, 2022 (*Table 1*)
- Two periods: pre-pandemic (pre-COVID) and during pandemic (COVIDera)
- Variables: SES, age, RT intent (curative, palliative, SBRT), regimen (conventional) fractionation and hypofractionation), disease site, and sex.
- SES obtained by matching postal code with provincial data tool with four distinct dimensions: 1) residential instability, 2) material deprivation, 3) ethnic concentration, and 4) dependency.
- For each SES dimension, a score of 1-5 (best-worst) is assigned (Figure 1 and SES **Dimensions definitions**).
- Backward stepwise multivariable logistic regression analysis was performed to identify variables associate with risk of AEs
- Significance defined as p<0.05 with increased risk of AEs.

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	_		preCOVID	5499	35.0%				

Table 1 – Patient (N=15715) characteristics of study cohort

Figure 1 – Mapping of patients Socio-Economic Status with Adverse Events

Patient postal codes over the 3 years (A) were matched to the dissemination areas within the Ontario Marginalization Index (B) that categorizes 4 SES dimensions of people living in each dissemination areas into quintiles based on 2016 Census answers. In (C) the instability quintile score (1-5) is color coded and darker shades represent more patients belonging to a dissemination area with the same score. The number of emergency (EP) and unplanned radiation nursing clinic (RNC) visits for each unique patient during the 90-day period following a course of radiotherapy was layered on the map (D).



SES Dimensions definitions

- **Residential instability** refers to area-level concentrations of people who experience high rates of family or housing instability.
- Material Deprivation is closely connected to poverty, and it refers to inability for individuals and communities to access and attain basic material needs.
- Dependency refers to area-level concentrations of people who do not have income from employment.
- **Ethnic concentration** refers to high area-level concentrations of people who are recent immigrants and/or people belonging to a 'visible minority' group

CONCLUSIONS

SES (residential instability and material deprivation) were associated with the increased risk of ED visits within 90 days of RT.

Proactive care and virtual monitoring during the 90-day period after RT in high-risk patients may reduce ED visits.

- 5756 AEs observed (*Figure 2*)

- materially deprived.



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Dimension	Quintiles			
Residential Instability	1 = most household/dwel 5 = least household/dwell			
Material deprivation	1 = most material resourc 5 = least material resource			
Dependency	1 = lowest proportions of force 5 = highest proportions of			

force

Ethnic Concentration

Mate

RESULTS

15715 patients (5499 pre-COVID and 10216 COVIDera patients)

• AE risk was associated with

• patient age (p<0.001), disease site (p<0.001), treatment intent (p<0.001), treatment regimen (p=0.005), treatment period (pre-COVID) vs. COVIDera) (p<0.001) and material deprivation (p=0.027).

After adjusting for multiple variables:

• Least materially deprived were at lower risk (Odds Ratio (OR)=0.88, 95%CI [0.78-0.98]) of developing AEs than patients who were most

• Patients with more (5 vs 1-4) residential instability (p<0.001; **OR=0.82**, 95%CI [0.74-0.90]) were at reduced the risk of ED visits. Less (1 vs 2-5) materially deprived patients (p=0.006; OR=0.76, 95%CI [0.66-0.88]) were at reduced the risk of ED visits.

Figure 2 – AEs by type (Radiation nursing clinic vs. ER), year and treatment regimen used

% Patients reporting to RNC or ER by RT treatment intent per year

Proportion of patients with ER visit



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f seniors, children, and those not in the labour



1 = lowest proportions of recent immigrants and visible minorities 5 = highest proportions of recent immigrants and visible minorities