Relationship between a National Cash Transfer Programme and Suicide Reduction: A Quasi-Experimental Study

Invited lecture · Daiane Borges Machado

Dr. Daiane Borges Machado is a psychologist. She holds a Master's degree in Collective Health, and a PhD in Epidemiology & Global Mental Health from the London School of Hygiene and Tropical Medicine, UK. She currently holds a research associate position at CIDACS/FIOCRUZ (Center For The Integration Of Data And Knowledge For Health), and a research fellow position at the Harvard Medical School. She is also a member of The Lancet Commission for Suicide Prevention. She has worked as a consultant for PAHO/WHO, a Mental Health Specialist for NGOs, and also coordinated a NGO dedicated to suicide prevention in Brazil in 2014. Her research has been focused on understanding and evaluating the effects of social determinants, poverty-relief and mental health (MH) interventions on suicide in Brazil. Her current endeavour is applying quasi-experimental impact evaluation methods for 'big data' on the evaluation of MH related outcomes, including suicide, to support evidence-based policymaking. While there is a long tradition of addressing mental illness with the exclusive use of clinical treatment, her studies have demonstrated a significant association of MH problems with socioeconomic factors.

Abstract. Socioeconomic factors have been consistently associated with suicide, and economic recessions are linked to rising suicide rates. However, evidence on the impact of socioeconomic interventions to reduce suicide rates is limited. This study investigates the association of the world's largest conditional cash transfer programme with suicide rates in a cohort of half of the Brazilian population. Methods and Findings: We used data from the 100 Million Brazilian Cohort, covering a 12-year period (2004 to 2015). It comprises socioeconomic and demographic information on 114,008,317 individuals, linked to the 'Bolsa Família' programme (BFP) payroll database, and nationwide death registration data. We estimated the association of BFP using inverse probability of treatment weighting, estimating the weights for BFP beneficiaries (weight = 1) and non-beneficiaries by the inverse probability of receiving treatment (weight = $E(ps)/(1-E(ps))$. We used an average treatment effect on the treated (ATT) estimator and fitted Poisson models to estimate the incidence

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rate ratios for suicide, associated with experience of BFP. The main limitation of the study was lack of control for previous mental disorders and access to means. There were 36,742 suicide cases among the 76,532,158 individuals aged 10, or older, followed for 489,500,000 person-years at risk. Suicide rates among beneficiaries and non-beneficiaries were 5.4 (95% *CI* = 5.32, 5.47, $p < 0.001$) and 10.7 (95% *CI* = 10.51, 10.87, $p < 0.001$) per 100,000 individuals. BFP beneficiaries had a 56% lower suicide rate than non-beneficiaries (*IRR* = 0.44, 95% *CI* = 0.42, 0.45, $p < 0.001$). This association was higher among women (*IRR* = 0.36, 95% *IC* = 0.33, 0.38, $p < 0.001$), and younger individuals (*IRR* = 0.45, 95% *IC* =0.43, 0.48, $p < 0.001$). Conclusions: We observed that BFP is associated with reduced suicide rates, with similar results in all sensitivity analyses. These findings should help to inform policymakers and health authorities to better design suicide prevention strategies. Targeting social determinants using cash transfer programmes could be important in limiting suicide, which is predicted to rise with the economic recession, consequent to the Covid-19 pandemic.