Uptake of Cervical Screening Among Mothers of Children with Disabilities: Evidence from Finland

Mauro Martinelli[a], Elena Neri[b], Nicoletta Balbo[a], Pekka Martikainen[c]

[a] *Bocconi University, Dondena Centre for Research on Social Dynamic and Public Policy*
[b] *Nuffield College,Oxford University*
[c] *Helsinki Institute for Demography and Population Health, University of Helsinki*

Abstract

In this paper, we investigate how caring for a child with a disability shapes mothers' uptake of preventive cervical cancer screening. Prior research highlights caregiving as a strongly gendered activity with substantial implication for caregivers' health. Yet, little is known about how caregiving affects mothers' own engagement in preventive care. Two contrasting hypotheses guide our analysis: caregiving may constrain mothers' time and resources, reducing preventive behaviors; alternatively, it may facilitate health-system contact and trigger risk reappraisal, facilitating uptake. Using longitudinal Finnish administrative data, we implement a staggered difference-in-differences design, comparing screening participation for mothers of children with disabilities to similar mothers. Preliminary event-study estimates show no systematic pre-trends, but suggest an anticipation effect prior to caregiving onset. Post-treatment estimates are positive yet not statistically significant. Overall, although exploratory, findings suggest caregiving does not suppress preventive behavior and may modestly facilitate screening. We discuss implications for outreach to caregivers and outline directions for future research.

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1. Introduction

This paper examines whether caring for a child with a disability affects women's preventive healthcare use, focusing on cervical cancer screening in the Finland.

Approximately 15% of the global population lives with a disability, effectively constituting the world's largest minority. Within this group, an estimated 14 million children and adolescents live with a chronic condition, and evidence suggests this number is rising (Houtrow et al., 2014; Mark et al., 2025). The consequences extend beyond the child: families, and especially mothers, often provide intensive and sustained care, making informal caregiving an essential element of their daily lives.

Care work remains strongly gendered. Women shoulder a disproportionate share of childcare responsibilities and provide most unpaid informal caregiving (Barzallo et al., 2024; Carmichael and Charles, 2003; Labbas and Stanfors, 2023; Pinquart and Sörensen, 2003). While much of this literature focuses on care for older adults, emerging work indicates a similar pattern in the care children with disabilities (Mark et al., 2025).

Informal caregiving affects caregivers' quality of life in complex ways. Although some studies highlight positive experiences, such as a feelings of gratification, love and achievement

(Horsley and Oliver, 2015; Zygouri et al., 2021), a growing body of large-scale evidence documents substantial adverse consequences for caregivers of children with disabilities. These include, among others, heightened fatigue, musculoskeletal disorders, inflammatory dysregulation, depression, anxiety and sleep disturbances (Brekke and Alecu, 2023), alongside lower perceived quality of life (Balbo and Bolano, 2024; Bamber et al., 2023a; Bamber et al., 2023b). These burdens appear more severe for women than for men (Pinquart and Sörensen, 2003).

Despite well-established spillovers to caregivers' health, studies of parents' own preventive care when caring for children with disabilities are limited. Evidence from related contexts shows that caregivers of adults may engage riskier behaviors, including smoking, alcohol or drug use, and physical inactivity (Gottschalk et al., 2020), or delay routine check-ups (Kim et al., 2021). Mothers of young children are already at higher risk of postponing routine preventive examinations (Nguyen et al., 2022). Available evidence suggests that caring for a child with a disability might further reduce engagement in health-promoting self-care, delay medical appointments and lead to forgone preventive screenings (Chafouleas et al., 2020; Liu et al., 2024). At the same time, qualitative work documents heterogeneity in this association: caregivers with greater social support, fewer economic constraints, or lower care intensity report efforts to maintain preventive behaviors (e.g. Chafouleas et al., 2020).

Cervical cancer screening is a salient test case. Across most European countries, population-based cervical cancer programs are designed to reduce financial and informational barriers by inviting all women within targeted age ranges. In Finland, coverage increased sharply after screening was introduced in 1963 and expanded into a national program in 1970, followed by a steady decline in cervical cancer incidence from the 1970s through the 1990s. Screening is estimated to have reduced both incidence and mortality by roughly 80% (Lönnberg et al., 2012). However, since the 1990s, incidence has risen among women under 40, partly due to growing HPV prevalence and higher smoking rates among younger cohorts (Anttila et al., 2015), a known risk factor for cervical cancer. Participation also remains socially stratified by socioeconomic status, health, and migration background (von Wagner et al., 2011)—inequalities that caregiving burdens may exacerbate. For mothers of children with disabilities, who balance intense caregiving with work, family and social roles (Kimbell et al., 2021), the risk of postponed or forgone screening may be acute. Conversely, greater coordination with health services could lower practical barriers, and create opportunities to sustain screening uptake.

Identifying how caregiving for a child with a disability shapes women's preventive healthcare is therefore crucial for both highlighting inequalities in an understudied population and informing more inclusive health policies. Promising approaches—such as flexible appointment schedules, targeted outreach reminders, and at-home self-sampling kits—have proved feasible among disadvantaged populations (Vinson et al., 2025). Tailoring these practices to the specific constraints and opportunities faced by mothers caring for a child with a disability could help improve preventive screening coverage.

2. Data, variables and methods

We draw on Finnish administrative registers covering the entire Finnish resident population. Information on cervical cancer screening is obtained from the Finnish Cancer Registry, while socio-demographic indicators on gender, education level, marital status and origin background were extracted from the population register of Statistics Finland. Child-level diagnostic information is drawn from the Care Register for Health Care (HILMO), which records all hospital and specialist outpatient diagnoses.

The analytical sample includes all female mothers observed within the screening-eligible age range (30–60), and with at least one child younger than 16, twins excluded. Women are not considered at risk until they have at least one child; accordingly, follow-up begins one year after their first childbirth. The treatment group comprises mothers who, at any point, are observed living with a child diagnosed with a disability, while the control group includes mothers whose children are never diagnosed with a disability.

Caregiving is measured through a binary indicator identifying whether a woman is the mother of a child recorded with a disability diagnosis in HILMO. The outcome is a binary indicator for attending cervical cancer screening in a given year, conditional on eligibility under national screening guidelines.

Baseline controls include age, educational level, marital status, employment status, number biological children, and region-by-year fixed effects to capture local and temporal variation in screening invitations.

To isolate the effect of caregiving on screening uptake, we implement a staggered difference-in-differences design (Callaway and Sant'anna, 2021), exploiting variation in the timing of caregiving onset. Mothers are coded as treated from the first wave they first experience caregiving; only never-treated mothers serve as controls. We estimate group-time average treatment effect as

$$ATT_{g,t} \;=\; \mathbb{E}[\,Y_t(1) - Y_t(0)\,|\,Gg = g,\ t \geq g\,]$$

where $G_i = g$ is the first treatment year for mother i. Estimates are aggregated across treatment cohorts to recover the overall effect. We report event-study coefficients to assess pre-trends and to trace the dynamic impact relative to the onset of caregiving (t=0). Standard errors are clustered at the individual level.

3. Preliminary results

Figure 1 shows preliminary event-time estimates of caregiving onset on the probability of receiving a cervical cancer screening.

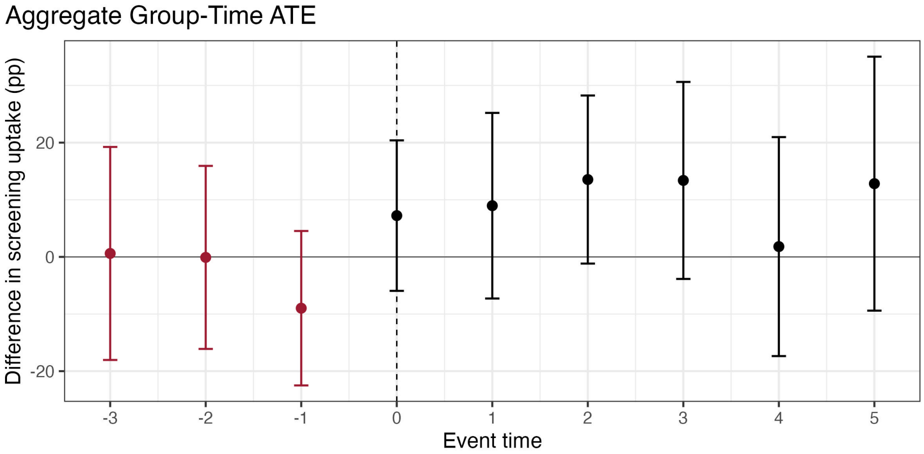

Figure 1: Event-study estimates of the impact of caregiving on cervical cancer screening uptake.

Pre-treatment estimates are close to zero, with wide but balanced confidence intervals, consistent with the parallel-trends assumption. This “flat” pre-trend strengthens confidence that the post-onset dynamics can plausibly be interpreted as the effect of caregiving, rather than a pre-existing divergence. A notable decrease in cancer screening probability at t= -1 suggests a significant anticipation effect in the year before the first reported caregiving. Starting at t=0, point estimates turn positive and remain elevated for several years. Contrary to expectations from much of the prior literature, mothers of children with disabilities seem more likely to attend cervical cancer screening than comparable mothers. However, the graph shows that differences with control mothers is not statistically significant.

Several limitations should be acknowledged. The number of mothers caring for a child with a disability remains relatively small, increasing estimates variance. Moreover, in this preliminary work, the caregiving indicator aggregates children with heterogeneous impairment levels, limiting distinctions between severe and milder disabilities. Future developments will focus more precisely identifying the timing and severity of disability and their heterogeneous impact on preventive care trajectories.

At this stage, findings are suggestive rather than conclusive, and they invite further analysis and reflection on their implications. Recent evidence shows that family-centered care approaches increase coordination with the health system for mothers of children with intellectual disabilities, which could facilitate greater uptake of preventive services (Butler et al., 2025; Mestre et al., 2024). In parallel, the experience of a child’s disability may prompt mothers to reassess risks and increase health monitoring. In a related context, Fadlon and Nielsen (2019) show that nonfatal heart attacks generate positive spillovers within families, increasing the initiation of cholesterol-lowering medication; a similar mechanism might be at play in this context.

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