# Earning potential in paediatric-onset IBD – a complex interplay

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**Running Head**: Earning potential in PIBD

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Individuals with childhood-onset inflammatory bowel disease (IBD) have consistently been shown to have similar educational attainment as the general population, albeit that previous studies have been small or cross-sectional in nature.[1,2] Conversely, those with adult-onset IBD have been shown to have poor work-related outcomes, likely due to the complex interactions between IBD symptoms, medical and psychiatric co-morbidities and potentially income itself.[3,4] In patients diagnosed in early adulthood, reduced ability to work has been associated with lower educational attainment and female sex, with disease duration and the need for biologicals or immunomodulators also shown to be factors.[5] Current data would therefore suggest that life-long earnings in those with IBD are likely influenced by numerous compounding factors which interact during adolescence and early adulthood.

In this issue of Alimentary Pharmacology & Therapeutics Malmborg *et al* (reference) use a large national case-control study to evaluate adult earnings in patients diagnosed with IBD in childhood. After identifying 5,404 IBD patients diagnosed <18yrs from their Swedish National Patient Register they case-matched 10:1 from the general population. Analysing data from the 1990s (to include patients exposed to immunomodulators) the authors analysed earnings between the ages of 20-30yrs. The primary outcome was annual taxable earnings with secondary outcome annual personalised disposable income. Subgroup analyses were performed stratifying for sex, IBD subtype and more severe disease phenotype (i.e. those patients requiring IBD surgery or long-term inpatient treatment).

Results showed that individuals with and without IBD had similar education levels (except for those with more severe phenotype who had lower educational attainment), martial status and unemployment. However, an increased proportion of patients with IBD had a disability pension or were on sick leave compared to the general population. With regard to primary outcome those with childhood-onset IBD had a modest 5.4% lower annual taxable income (95%CI -9.1 to -1.8%); in those with a more severe phenotype this difference was more pronounced (-16.3%; 95%CI -24.7 to -7.9%). Various potential reasons for these findings were provided by the authors, such as overall reduced school attendance, fatigue and loss of career drive due to chronic illness. The earning gap also seemed to widen with increasing age. Interestingly there was no significant difference in annual *disposable* income in those with and without IBD; the authors suggest that this was likely due to the well-resourced and comprehensive social security system in Sweden coupled with good job security.

Although some economies may be able to adequately support patients with chronic health issues to sustain a modest income level, those living with IBD continue to have a number of ongoing challenges in the workplace. These include fatigue, diarrhoea, faecal incontinence, inflexible work environment and difficultly accessing appropriate disability rights.[6] It is notable that the IBD disability index developed by expert consensus included indices relating to education, work and employment and social security services.[7] Although further data is required to ascertain the impact of childhood-onset IBD on future employment and earnings in different economic settings it is also vital that employers recognise the effect of IBD on their employees and provide suitable support on a practical level.[8]

## References

1. Calsbeek H, Rijken M, Dekker J, van Berge Henegouwen GP. Disease characteristics as determinants of the labour market position of adolescents and young adults with chronic digestive disorders. Eur J Gastroenterol Hepatol. 2006;18(2):203-9.

2. El-Matary W, Dufault B, Moroz SP, Schellenberg J, Bernstein CN. Education, Employment, Income, and Marital Status Among Adults Diagnosed With Inflammatory Bowel Diseases During Childhood or Adolescence. Clin Gastroenterol Hepatol. 2017;15(4):518-24.

3. Su S, Marrie RA, Bernstein CN. Factors Associated With Social Participation in Persons Living With Inflammatory Bowel Disease. J Can Assoc Gastroenterol. 2022;5(2):59-67.

4. Bernstein CN, Kraut A, Blanchard JF, Rawsthorne P, Yu N, Walld R. The relationship between inflammatory bowel disease and socioeconomic variables. Am J Gastroenterol. 2001;96(7):2117-25.

5. Mariappan L, Jiang XY, Jackson J, Drew Y. Emerging treatment options for ovarian cancer: focus on rucaparib. Int J Womens Health. 2017;9:913-24.

6. Le Berre C, Peyrin-Biroulet L, Buisson A, Olympie A, Ravel MH, Bienenfeld C, et al. Impact of inflammatory bowel diseases on working life: A French nationwide survey. Dig Liver Dis. 2019;51(7):961-6.

7. Peyrin-Biroulet L, Cieza A, Sandborn WJ, Coenen M, Chowers Y, Hibi T, et al. Development of the first disability index for inflammatory bowel disease based on the international classification of functioning, disability and health. Gut. 2012;61(2):241-7.

8. Paulides E, Daker C, Frampton C, Gearry RB, Eglinton T, de Boer NKH, et al. Overcoming Workplace Disability in IBD Patients: An Observational Study. Inflamm Intest Dis. 2020;5(2):84-92.