

# Epidemiology of Pyoderma Gangrenosum in Italy: Temporal Trends and Impact of the COVID-19 Pandemic



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## INTRODUCTION

Pyoderma Gangrenosum (PG) is a rare neutrophilic dermatosis characterized by painful, rapidly progressive ulcerations, often associated with systemic inflammatory diseases [1]. Despite advancements in diagnostic criteria, including the Delphi consensus criteria and the PARACELSUS score, PG remains a diagnostic challenge [2,3]. A notable increase in PG diagnoses over the last years has raised concerns about whether this trend reflects improved detection or a true epidemiological rise, This study evaluates epidemiological trends in PG diagnoses in Italy (2013–2024) to determine whether increased diagnoses are due to refined diagnostic methodologies or external immunological factors.

## METHODS

A cross-sectional analysis was conducted using anonymized data from four major dermatology centers in Italy (Bologna, Turin, Milan and Pisa); data analysis deployed one-way ANOVA, and Poisson regression models to assess temporal trends in PG diagnoses. Significance was set at  $\alpha = 0.05$ .

## RESULTS

The overall analysis showed fluctuating numbers of annual diagnoses, with significant increases in 2015 and 2021 ( $p < 0.001$  in 2021) and a significant drop in 2020 (**Table 1, Figure 1**). Gender summaries revealed that cumulative diagnoses were higher in females (126) than males (87). Center-specific results were heterogeneous; both the ANOVA ( $p < 0.05$ ) and the Kruskal-Wallis test ( $p < 0.01$ ) indicated significant differences across centers. When comparing periods, jump in cumulative diagnoses post-2018was found (**Figure 2**). This trend was exemplified by Bologna and Milan with a respective yearly increase of 0.25 and 0.09 cases.

Year	New Diagnoses	% Change	p value
2013	14		
2014	8	-42.9	0.3
2015	20	150.0	<0.01
2016	14	-30.0	0.4
2017	12	-14.3	0.8
2018	21	75.0	0.2
2019	16	-23.8	0.5
2020	5	-68.8	<0.01
2021	23	360.0	<0.001
2022	29	26.1	0.5
2023	26	-10.3	0.8
2024	25	-3.8	1.0

Table 1: Overall Annual Diagnoses of PG

## DISCUSSION

The jump in diagnoses of PG might signify a genuine epidemiological increase, mainly due to COVID-19 related immune changes, a consequence of diagnoses rebound after the emergency or an artifact due to improved diagnostic accuracy [4]. The most reliable option is the third one. Although we identified a drop in 2020 and an increase in 2021, our findings indicated that the significant increase in diagnoses began before 2020, suggesting that diagnostic refinement, rather than a post-COVID-19 surge, may be the real cause of the observed trends. Further studies and the introduction of national and international database would help in tracking PG incidence.

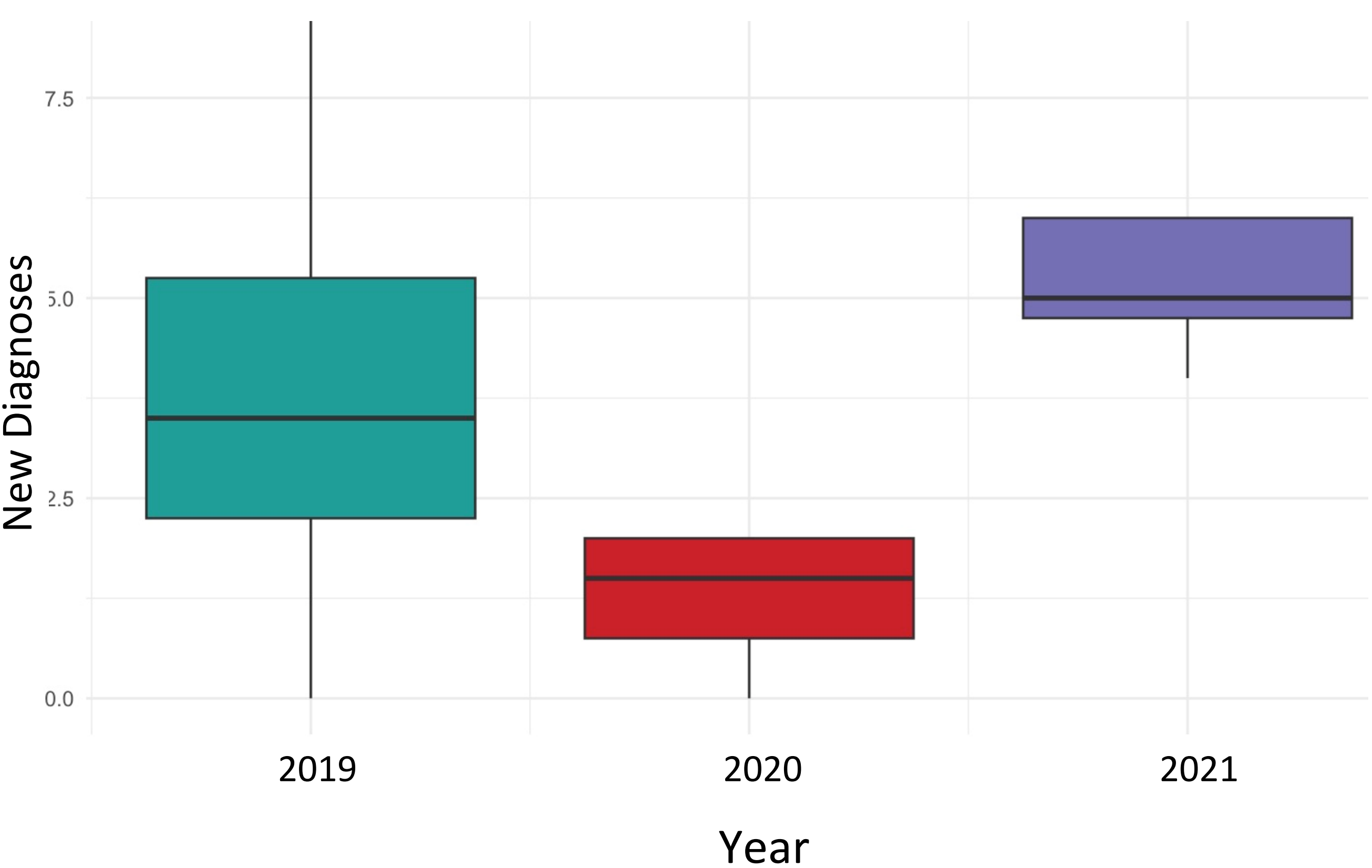


Figure 1. Distribution of new diagnoses showed a drop in 2020, compared to 2019 and 2021

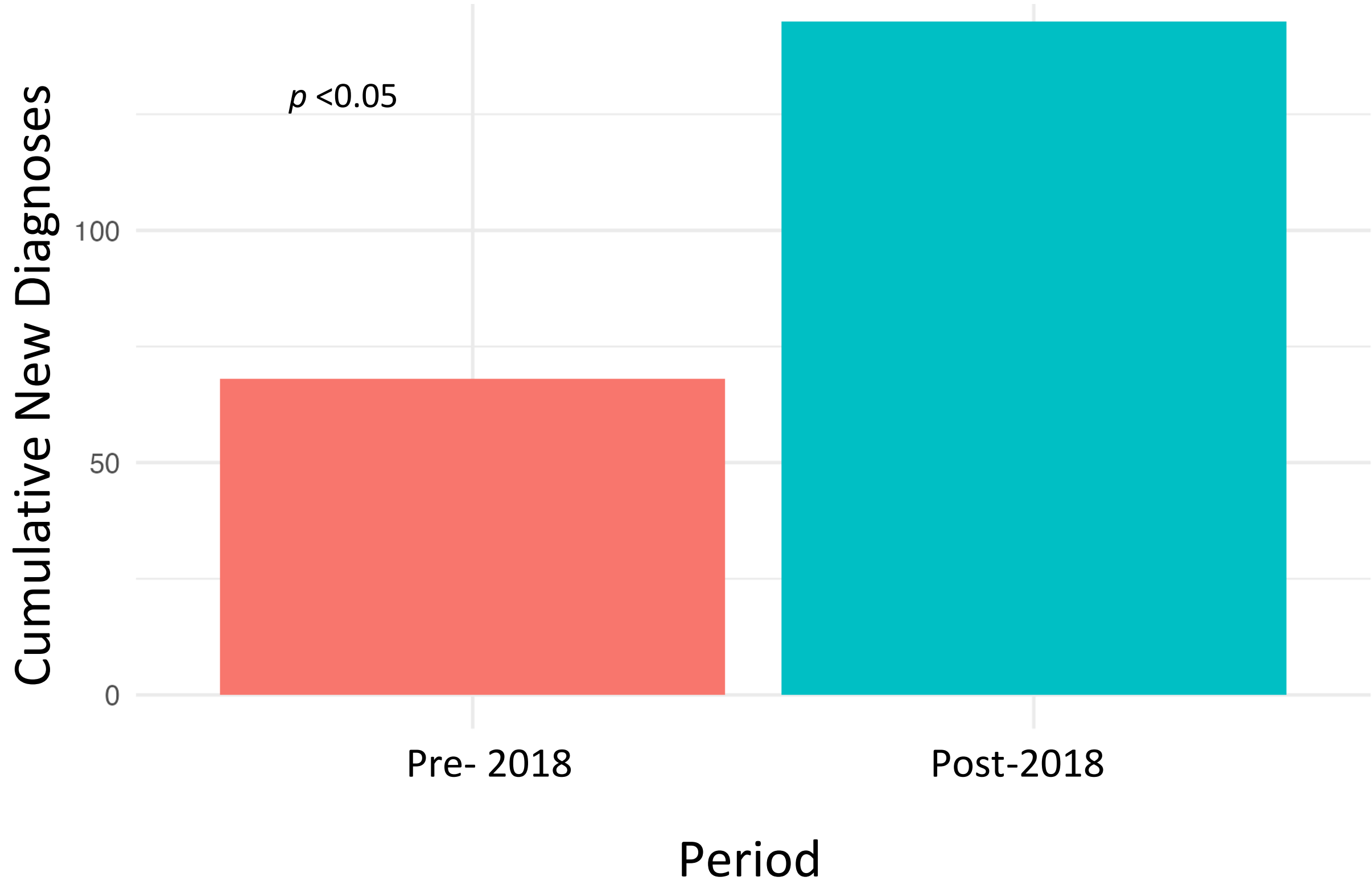


Figure 2. Cumulative new diagnoses (pre-2018 vs post-2018) showed an increase post-2018