**Supplemental 1: Characteristics of studies included in systematic review and our study**

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| Study | Country | Institution | Date | Inclusion andmexclusion criteria | Number of patients with EGD | IEL / Control | Mean /Medianage (Age group) | Female% | Outcome N(%) |
| Mahadeva,  2002 | UK | St James’s  University  Hospital | 8/1998  to  7/1999 | Adult patients who had a duodenal biopsy reported by a single pathologist over the study period. | 626 | 14 / 22 | 55.2  (Adults) | 38.9% | Celiac disease = 15 (2.4%) |
| Kakar,  2003 | USA | Mayo Clinic,  MN | 1/1995  to  3/2001 | Patients underwent upper GI endoscopy with duodenal or upper jejunal biopsy samples.  Patients with prior diagnosis of GS were excluded | 3,190 | 43 / 46 | 51  (mixed) | 55.8% | Celiac disease = 4 (9.3%)  IBD = 5 (11.6%) |
| Aziz,  2015 | UK | The Royal  Hallamshire  Hospital | 2006  to  2013 | Adults patients with duodenal intraepithelial lymphocytosis | NA | 215 / NA | Adults | NA | Celiac disease = 48 (22%) |
| Shmidt,  2013 | USA | Mayo Clinic,  MN | 1/2000  to  12/2009 | Children < 18 years who had duodenal biopsies obtained during the study period. | 1,290 | 56 / NA | 7.8 (Children) | 64.3% | Celiac disease = 5 (9%)  IBD = 5 (9%) |
| Shmidt,  2014 | USA | Mayo Clinic,  MN | 1/2000  to  12/2010 | Adults > 18 years who had duodenal biopsies obtained during the study period. | 15,839 | 1105 / NA | 48  (Adults) | 73% | Celic disease = 4 (6%)  IBD = 88 (8%) |
| Parihar,  2017 | Ireland | Tallaght  University  Hospital | 2012  to  2014 | Adults > 18 years who had EGD for GI symptoms and had at least one biopsy from the second part of the duodenum with an increased numbers of IELs (>25IELS/100 Enterocytes | 6,224 | 114 / NA | 50  (Adults) | 70% | Celiac disease = 14/83 (16%) |
| Mayo,  2020 | USA | Mayo Clinic,  MN | 1/2000  to  6/2019 | Children (<18 years) with GI symptoms who underwent EGD during the study period | 12,744 | 426 / 474 | 10.1 (Children) | 60% | Celiac disease = 20 (5%)  IBD = 46 (12%) |

NA: Not Applicable; ROB: Risk of bias.