

## A Descriptive Study on the Population of Patients with Inflammatory Bowel Disease at the Veterans Affairs Caribbean Healthcare System in San Juan

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**Objective:** Inflammatory bowel disease (IBD) comprises a group of related conditions characterized by idiopathic inflammation of the gastrointestinal (GI) tract. Several studies have described the epidemiology of IBD in Puerto Rico (PR) but none have included the US military and Veteran population. The goal of this study was to describe the prevalence of IBD in this population as well as to describe patients' characteristics.

**Methods:** We conducted a retrospective analysis of 163 patients using data gathered from electronic medical records of Veterans who received care at the VA Caribbean Healthcare System (VACHS) and the diagnosis of IBD between October 1, 2010 and September 30, 2015. The prevalence out of 100,000 in our study was calculated for each Fiscal Year.

**Results:** Overall, the prevalence of IBD markedly increased among VA patients. Among 163 patients who met inclusion criteria, 7 (4.3%) patients had a diagnosis of undetermined IBD, 45 (27.6%) had Crohn's disease (CD) and 111 (68.0%) had ulcerative colitis (UC). This information was used to compare the epidemiologic data of IBD in the population receiving care at the VACHS with the epidemiologic data of IBD in the general population in PR.

**Conclusion:** This is the first study to describe the prevalence of IBD and to describe additional characteristics of patients with IBD receiving care at the VACHS. [*PR Health Sci J* 2020;39:51-54]

*Key words:* IBD, Ulcerative colitis, Crohn's disease, Veterans, Hispanic

Inflammatory bowel disease (IBD) comprises a group of related conditions characterized by idiopathic inflammation of the gastrointestinal (GI) tract. It is mainly seen in developed countries and its incidence has increased since the beginning of the 20th century (1). The two most common inflammatory bowel disorders are Crohn's disease (CD) and ulcerative colitis (UC) (2). Although several features may differentiate CD from UC, overlap is significant. The exact pathogenesis of these conditions remains unknown, although an interplay between the intestinal bacterial microbiota, diet, immune, genetic, and environmental factors are thought to be involved. These two conditions can result in substantial morbidity, decreased quality of life, and excess health care resource use (3).

Few studies have described the epidemiology of IBD in the US military and Veteran population. Furthermore, fewer studies have described the epidemiology of IBD in the Hispanic population. The VA Caribbean Healthcare System (VACHS) is unique in the sense that it encompasses a population of patients that are both Hispanic and of military background.

The goal of this study was to describe the prevalence of IBD in the population receiving care at the VACHS. As a secondary aim, we described patients' characteristics including ethnicity, age at diagnosis, sex, extraintestinal manifestations, period of military service, among others.

### Methods

After approval of the Institutional Review Board, we conducted a retrospective analysis using data gathered from

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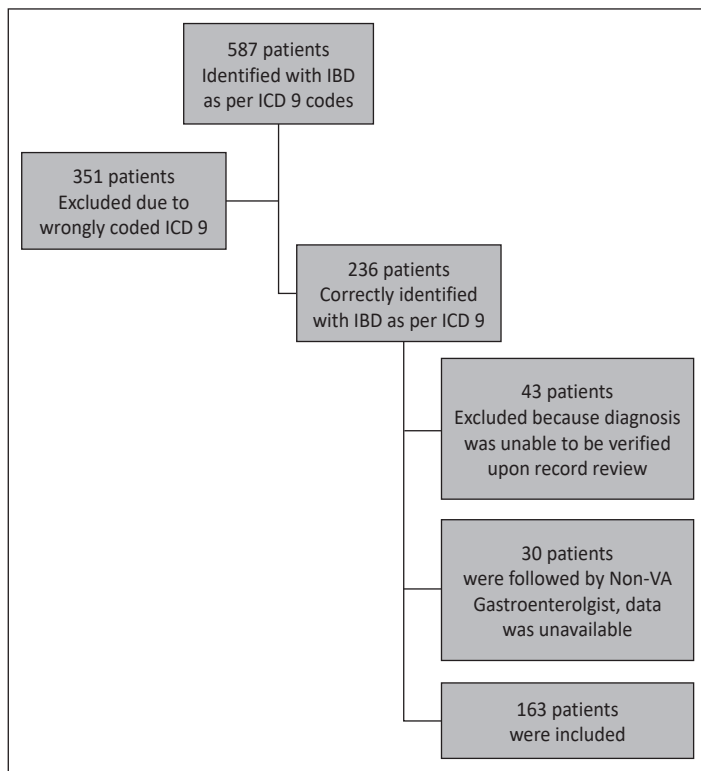
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electronic medical records of Veterans who received care at the VACHS and had the diagnosis of IBD, CD or UC between October 1, 2010 and September 30, 2015 with age between 21-89. Health Information and Management Service provided an electronic list of patients with the diagnosis of IBD, CD, or UC, as coded by the 9th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD 9). Exclusion criteria were Veterans who did not receive care between the previously-mentioned range of dates, age less than 21 or greater than 89. Co-investigators evaluated the medical records to verify diagnosis. The review included primary care notes, gastroenterology evaluation documentation, colonoscopy reports, radiologic images and pathology reports; if information was not able to be confirmed or patients did not meet inclusion criteria, these were also excluded.

Prevalence of UC, CD and IBD was calculated by dividing the number of cases in the specific subgroup for each fiscal year by the total number of individuals in that same subgroup and presented as the number of cases per 100,000.

### Results

During the study period between October 1, 2010 and September 30, 2015 we identified 587 subjects with ICD 9 codes for CD or UC. However, 351 of these study subjects had an incorrect ICD 9 as determined by record review for which they were excluded. Of the remaining 236 subjects, 73 lacked



**Figure 1.** Flow diagram of the eligible subjects and selection of study subjects after exclusion criteria

documentation of a confirmed diagnosis of inflammatory bowel disease or were diagnosed by a private gastroenterologist but no information was available about disease extension, therapy and other variables and were not treated for such condition at the VACHS. For these reasons, only 163 subjects were included in our study. Refer to Figure 1 for further details.

Overall, the prevalence of IBD out of 100,00 patients increased by fiscal year for both ulcerative colitis and Crohn’s disease from 71.9 for UC and 25.1 for CD in fiscal year 2011 to 126.4 for UC and 50.4 for CD in fiscal year 2015. See Table 1.

**Table 1.** Prevalence of Hispanic Veterans with IBD

Fiscal year	IBD	UC	CD	Undetermined IBD
2011	100.2	71.9	25.1	3.3
2012	137.0	91.3	41.3	3.3
2013	151.2	99.7	44.1	4.2
2014	176.8	114.7	47.4	6.3
2015	201.5	126.4	50.4	7.5

*Rate per 100,000*

The mean age of our population was 49.1 and most were men [155 (95.1%)]. Of the cohort, 7 (4.3%) patients had a diagnosis of undetermined IBD, 45 (27.6%) had CD and 111 (68.0%) had UC. Overall, 148 (90.8%) patients were Hispanics. Their disease extension involved small bowel only in 22 (13.8%), proctitis in 18 (11.3%), left-sided colon in 55 (34.4%), right-sided colon in 8 (5.0%), pancolitis in 45 (28.1%) and small bowel and colon in 12 (7.5%). Most patients did not have extra-intestinal manifestations (92.8%); but among those having, the most common were arthritis (4.6%), pyoderma gangrenosum (1.3%) and uveitis (1.3%).

Their period of military service included 4 (2.4%) Veterans that served at the World War II, 27 (16.6%) in Korea, 65 (40%) in Vietnam, 1 (0.6%) at the Operation Enduring Freedom (OEF)/Operation Iraqi Freedom (OIF) and 68 (40.5%) served in other conflicts. Overall, most Veterans (93.9%) did not have a documented environmental exposure such as agent orange or radiation. Among the cohort, 34 (20.9%) patients were smoking at the time of diagnosis. In addition, we identified that 38 (23.3%) of patients were receiving treatment with biologic agents; most commonly for those in the CD group [19/38 (42.2%)]; defined as the latest medication used by the patient during the study period. Overall, most patients with use of biologics (42%), prior surgery (20.2%), strictures (11%) and fistulae (8.6%) had Crohn’s disease. Refer to Table 2 for disease specific characteristics.

### Discussion

Few studies have described the epidemiology of IBD in Hispanics and in US military and Veteran patients.

Currently, no epidemiologic studies regarding IBD have been performed in patients receiving care at the VACHS. Incidence and prevalence studies in Puerto Rico (PR) have shown an increase in both CD and UC since the late 1990's (4). A prior study performed in PR in 2005 estimated that the prevalence of UC, CD and IBD was 23.3, 14.9 and 38.2 per 100,000 cases, respectively (5). However, a recent study performed in PR concluded that the general prevalence of IBD in PR increased over 4 times between 2005 and 2013 (6). Overall, the prevalence of IBD in PR for 2013 was 181.54 per 100,000 (90.77 for UC, 72.71 for CD and 18.05 for undetermined IBD per 100,000) (6). Although there is no prior epidemiology data in our institution, these findings compare to our study results of a two-fold increase in prevalence. Furthermore, a study performed at other VA facilities from 1998-2009 described an increase in the prevalence rates as well of CD more than two-fold from 136 per 100,000 in 1998 to 287 per 100,000 VA users in 2009 (7). Similarly, prevalence rates of UC increased by almost 2.5-fold from 198 per 100,000 in 1998 to 413 per 100,000 VA users in 2009 (7).

The prevalence of UC was higher than CD among the Veterans receiving services at our institution. This UC predominance among our Veteran population compares with a National Cohort Study among Veterans from 2013 (7). The mean age of diagnosis in studies conducted in PR was found to be 26.8 and 32.6 for CD and UC (4). However, in our population the mean age of diagnosis was older, as may be seen with known IBD bimodal age incidence peak. As expected, most patients with prior surgery, strictures and fistulae had CD. Thirty eight (23.3%) patients were receiving treatment with biologic agents. Among these, 1 patient had IBD, 19 patients had CD and 18 patients had UC.

### Conclusion

This study has limitations including that it is a retrospective chart review and that 73 patients were not included in the analysis because we were unable to either confirm their diagnosis and/or describe their characteristics. This limitation may have resulted in underestimation of the true prevalence of IBD in our population. Another limitation is the fact that our cohort consists of mainly male patients, therefore our results may not

**Table 2.** Study population characteristics

	Total (N=163)		IBD (n=7)		CD (n=45)		UC (n=111)	
	n	%	n	%	n	%	n	%
Age [Mean, SD]	49.1	17.5	48.9	16.6	44.0	19.5	51.1	16.5
Sex								
Male	155	95.1	7	100.0	43	95.6	105	94.6
Female	8	4.9	0	0.0	2	4.4	6	5.4
Ethnicity								
Hispanic	148	90.8	6	85.7	40	88.9	102	91.9
Caucasian	3	1.8	1	14.3	0	0.0	2	1.8
African american	2	1.2	0	0.0	0	0.0	2	1.8
Other	10	6.1	0	0.0	5	11.1	5	4.5
Disease extension								
Small bowel only	22	13.8	1	16.7	21	48.8	0	0.0
Colon – Proctitis	18	11.3	0	0.0	2	4.7	16	14.4
Colon – Left-sided	55	34.4	3	50.0	4	9.3	48	43.2
Colon – Right-sided	8	5.0	0	0.0	4	9.3	4	3.6
Colon – Pancolitis	45	28.1	0	0.0	3	7.0	42	37.8
Small bowel and colon	12	7.5	2	33.3	9	20.9	1	0.9
Extraintestinal manifestations								
Pyoderma gangrenosum	2	1.3	0	0.0	1	2.3	1	1.0
Erythema nodosum	0	0.0	0	0.0	0	0.0	0	0.0
Uveitis	2	1.3	0	0.0	1	2.3	1	1.0
Scleritis	0	0.0	0	0.0	0	0.0	0	0.0
Episcleritis	0	0.0	0	0.0	0	0.0	0	0.0
Arthritis	7	4.6	0	0.0	3	7.0	4	3.8
None	142	92.8	5	100.0	38	88.4	99	94.3
Period of military service								
World War II	4	2.4	0	0.0	2	4.4	2	1.8
Korea	27	16.6	1	14.3	5	11.1	21	18.9
Vietnam	65	40.0	3	42.9	13	29.0	49	44.1
OEF/OIF	1	0.6	0	0.0	0	0.0	1	0.9
Other	66	40.5	3	42.9	25	55.6	38	34.2
Environmental exposure								
Agent orange	7	4.3	0	0.0	0	0.0	7	6.3
Radiation	0	0.0	0	0.0	0	0.0	0	0.0
Other	3	1.8	0	0.0	1	2.2	2	1.8
None	153	93.9	7	100.0	44	97.8	102	91.9
Cigarette smoking	34	20.9	2	28.6	9	20.0	23	20.7
Use of biologic agents	38	23.3	1	14.3	19	42.2	18	16.2
Surgery	33	20.2	3	42.9	19	42.2	11	9.9
Presence of strictures	18	11.0	2	28.6	12	26.7	4	3.6
Presence of fistulae	4	8.6	1	14.3	11	24.4	2	1.8

IBD: Inflammatory bowel disease; CD: Crohn's disease; UC: Ulcerative colitis.

be representative of the non-VA IBD population and their characteristics. Increased referral of IBD patients requiring biologic agents at the VA is a potential bias due to accessibility of healthcare resources, nevertheless; only 23.3% of our study subjects were on such agents. Our study has several strengths including that it is the first study to describe the prevalence of IBD in patients receiving care at the VACHS. It also describes additional characteristics of patients with IBD receiving care at the VACHS, including evaluation for possible environmental exposures during active duty.

Understanding the prevalence of IBD in the VA is essential to quantify the public health burden of disease and inform policy makers regarding the allocation of resources and health services for these patients.

In conclusion, these findings have improved our knowledge about the epidemiology of IBD in PR and has provided useful information about this population receiving care at the VACHS.

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### Resumen

La enfermedad inflamatoria del intestino (EII) es un grupo de condiciones que se caracterizan por inflamación idiopática del tracto gastrointestinal. Varios estudios han descrito la epidemiología de la EII en Puerto Rico (PR) pero no han incluido la población militar y veteranos. Obejetivo: El objetivo de este estudio fue describir la prevalencia de la EII y las características de esta población. Métodos: Se realizó un análisis retrospectivo de 163 pacientes utilizando data del récord electrónico de veteranos con diagnóstico de EII entre octubre 1 de 2010 a septiembre 30 de 2015 que recibieron cuidado en el Hospital de Veteranos de San Juan, PR. Resultados: La prevalencia en nuestro estudio se calculó por cada año fiscal. En general, la prevalencia de la EII aumentó marcadamente en

nuestra población. Entre los 163 pacientes que cumplieron con los criterios de inclusión, 7 (4.3%) tenían diagnóstico de EII indeterminada, 45 (27.6%) tenían enfermedad de Crohn y 111 (68%) tenían colitis ulcerativa. Esta información fue utilizada para comparar la data epidemiológica de EII en la población recibiendo cuidado en el Hospital de Veteranos de San Juan con la data epidemiológica de EII en la población general de PR. Conclusión: Este es el primer estudio en describir la prevalencia y otras características de los pacientes con EII recibiendo cuidado en el Hospital de Veteranos de San Juan.

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