University of Zawia Journal of Medical Sciences

Volume 2, Issue 1, (2026), Pages: 08-14

UNIVERSITY OF ZAWIA

A Comparative Study of Knowledge Toward Ulcerative Colitis among Physicians and Pharmacists in Zawia, Western Libya

Einass R. Ibrahiem[1,*], Ebtesam A. Beshna[2], Wafa M. Alshaiby[1], Mabrouka A. Ishrayhah[1], Fayrouz Abualasad[1]

[1]Department of Pharmacology, Faculty of Pharmacy, University of Zawia, Zawia, Libya.
[2]Department of Pharmaceutics and Industrial Pharmacy, Faculty of Pharmacy, University of Zawia, Zawia, Libya.

*Corresponding author: Einass R. Ibraheim, Email: e.ragab@zu.edu.ly

Received: 15-04-2026 | Accepted: 17-05-2026 | Available online: 15-06-2026 | DOI: 10.26629/uzjms.2026.02

Abstract

Background: A chronic inflammatory bowel illness, ulcerative colitis (UC) is becoming more common worldwide, particularly in developing nations like Libya. A multidisciplinary approach is necessary for effective management, but little is known about the expertise and methods of Libyan healthcare professionals (HCPs). Objective: The purpose of this study was to evaluate and compare the clinical and pharmacological knowledge, of Western Libyan doctors and pharmacists with relation to the treatment of ulcerative colitis (UC) and related pharmaceutical problems, such as vitamin B9 (folate) deficiency.

Materials and Methods: Between September and October of 2024, 253 HCPs (124 pharmacists and 129 physicians) in Western Libya participated in a comparative cross-sectional study. A validated 26-item questionnaire encompassing demographics, treatment complications, and basic UC knowledge was used to gather data. SPSS version 27 was used for statistical analysis, and the Z proportion test was used to evaluate the two groups' levels of knowledge.

Results: The nature of UC (88.3% vs. 76.5%, P=0.016), common symptoms (89.1% vs. 73.9%, P=0.004), and aetiology (66.7% vs. 47.8%, P=0.003) were among the fundamental topics in which doctors showed noticeably greater understanding. On the other hand, while both groups showed inadequate knowledge, pharmacists performed relatively better than physicians in recognising vitamin B9 insufficiency as a result of sulfasalazine therapy (30.4% vs. 15.8%, P=0.007). Nevertheless, 69.6% of pharmacists remained unaware of this critical drug-nutrient interaction. The baseline knowledge of both groups of the general mechanism of action of aminosalicylates was similar.

Conclusions: Significant knowledge disparities exist between physicians and pharmacists in Libya, reflecting their specialized professional focuses. While physicians excel in clinical diagnosis, pharmacists demonstrate greater expertise in pharmacovigilance. These results underscore the need for targeted educational interventions and a collaborative care model to bridge knowledge gaps and optimize holistic management for UC patients in the region.

Keywords: Ulcerative Colitis, Knowledge, Healthcare Professionals, Libya, Aminosalicylates (5-ASA).

How to cite this article:

Ibrahiem ER, Beshna EA, Alshaiby WM, Ishrayhah MA, Abualasad F. A comparative study of knowledge toward ulcerative colitis among physicians and pharmacists in Zawia, Western Libya. Univ Zawia J Med Sci. 2026;2:8-14.

INTRODUCTION

Ulcerative Colitis (UC), a chronic inflammatory bowel disease (IBD) characterised by persistent inflammation of the colon and rectum, manifests as weight loss, bloody diarrhoea, and abdominal pain.[1] The progressively rising incidence and prevalence of UC is a significant global public health problem. [2] IBD, including UC, has historically been more common in Western countries, but it is becoming increasingly common in underdeveloped

countries like Africa and the Middle East, where little is known about its epidemiology and management. [3] The increasing incidence of the disease necessitates a deeper understanding of its consequences and management strategies in different populations.

For patients with mild to moderate UC, 5-aminosalicylates (5-ASAs) are an essential medication for bringing about and maintaining remission. A multimodal approach is typically used in the therapeutic approach to UC.[4] These drugs alleviate symptoms and prevent the condition from worsening by reducing inflammation in the intestinal mucosa. [4] Despite their demonstrated effectiveness, long-term use of 5-ASAs, especially sulfasalazine, has been associated with a number of adverse effects, including disruption of folate metabolism, which can lead to vitamin B9 (folate) insufficiency. [5] The serious health consequences of folate insufficiency, including macrocytic anaemia and an increased risk of cardiovascular problems, highlight the vital significance of regular monitoring and suitable replacement in UC patients receiving 5-ASA therapy. [6]

Healthcare professionals (HCPs), including as physicians and pharmacists, are crucial to the comprehensive care of UC patients. [7] Doctors are primarily responsible for correct diagnosis, therapy start, and general illness surveillance while guiding patients through their clinical journey. [7] By offering pharmaceutical advising, closely monitoring potential adverse drug responses, and ensuring optimal medication adherence, pharmacists also significantly contribute to enhancing treatment results. [8] Effective interprofessional communication between these two groups is necessary to optimise patient care, particularly in complex illnesses like UC where nutritional deficits and medication-related problems are widespread. [9] However, the evidence currently in publication suggests that perception gaps and disparities in HCPs' knowledge and behaviours may unintentionally affect the quality and consistency of treatment given. [10]

There is little information available in Libya about the epidemiology and treatment of IBD, including UC, but preliminary findings point to an increasing trend in incidence. [1] Previous studies on IBD in children in Libya have demonstrated the urgent need for further localised research to characterise the disease's features and treatment within the nation's healthcare system. [1] Additionally, research on HCPs' knowledge regarding UC and its related consequences, like vitamin inadequacies, in the Libyan healthcare system is conspicuously lacking. [2] This lack of local data highlights the need of research that evaluates healthcare personnel' current knowledge and practices in order to pinpoint problem areas and improve patient care.

To evaluate and compare the clinical and pharmacological knowledge, of Western Libyan doctors and pharmacists with relation to the treatment of ulcerative colitis in order to overcome these crucial gaps. It specifically aims to evaluate basic UC knowledge, identify professional knowledge gaps between doctors and pharmacists, and analyse pharmacological awareness of aminosalicylate therapy and its complications (including Vitamin B9 deficiency). This study will help create focused educational interventions and raise the general standard of care for UC patients in Libya by offering insights into the present knowledge of HCPs.

MATERIALS AND METHODS

Study Design and Sample

This study used a comparative cross-sectional design to evaluate doctors' and pharmacists' knowledge on ulcerative colitis (UC), the use of aminosalicylates, and how these factors affect vitamin and mineral deficiencies. The study population consisted of Western Libyan healthcare professionals (HCPs). Between September and October of 2024, a total of 253 people participated in the data collection process. A solid comparison between the two professional groups was ensured by customising the sample size and design to the medical professionals' level of skill. The sample was a convenience sample of healthcare professionals working in hospitals, community pharmacies, and primary care centers in Al-Zawia and nearby cities (Tripoli, Sabratah, Surman, Zuwarah). No a priori power analysis was conducted; the sample size was determined by the number of eligible participants willing to participate during the two-month study period. The response rate could

not be calculated due to the absence of exact denominator data.

Data Collection

Prior to the main study, the questionnaire was pilot-tested on 15 healthcare professionals (8 pharmacists and 7 physicians) who were not included in the final analysis. The pilot study aimed to assess clarity, comprehension, and average completion time. Minor wording modifications were made to improve clarity. Face and content validity were evaluated by a panel of five experts (two gastroenterologists, two clinical pharmacists, and one biostatistician). The experts reviewed the questionnaire for relevance, clarity, and comprehensiveness. Minor revisions were made based on their feedback.

The main tool for gathering data was a self-made, pre-tested, and validated questionnaire. After a comprehensive review of the literature, the questionnaire was created in English and its validity and reliability were carefully evaluated. Direct interviews and paper-based forms were used to distribute it. Twenty-six questions made up the survey, which was organised into four primary sections:

The first portion collected demographic information about the participants, such as age, gender, years of professional experience, city of residence, and academic credentials. The second section evaluated basic knowledge about UC, including its definition, most prevalent symptoms, common aetiology (abnormal immune response), and general consequences.

Ethical approval

This study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki. Prior to its commencement, the study protocol and questionnaire were reviewed and approved by the Ethical Review Committee of the Faculty of Pharmacy, University of Zawia, Zawia, Libya (Approval No. 25)

A thorough written explanation of the study's objectives, methods, and the voluntary nature of participation was given to each prospective participant. They were guaranteed the freedom to leave at any time without facing any repercussions. Each participant gave their informed consent before any data was collected. No personally identifiable information was gathered in order to maintain anonymity and confidentiality. In order to protect the privacy of all participating healthcare professionals, all responses were coded and analysed collectively

Statistical Analysis

All collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) software, version 27. Descriptive statistics, including frequency tables, were utilized to summarize the demographic characteristics and responses. The Z proportion test was employed to compare the proportion of correct answers between the physician and pharmacist groups for relevant knowledge questions. A P-value of less than 0.05 was considered statistically significant, given that six independent comparisons were performed, Bonferroni correction was applied to control for type I error. The adjusted level of significance was set at 0.0083 (0.05/6), indicating a statistically meaningful difference between the compared groups. Internal consistency reliability was assessed using Cronbach's alpha coefficient. The overall reliability of the questionnaire was acceptable (Cronbach's α = 0.78).

RESULTS

This cross-sectional study involved 253 healthcare professionals (HCPs) from Western Libya. (Table 1) provides an overview of the participants' demographic dispersion. Males made up 32.8% of the participants, with women making up the majority (67.2%). The workforce was comparatively young and inexperienced, as seen by the large percentage of the sample (37.2%) who were under 30 and the 67.6% who had 10 years or less of professional experience. Geographically, Al-Zawia accounted for the greatest percentage of participation (63.6%). A thorough comparison between the two professional groups was made possible by the

sample's nearly equal distribution between pharmacists (49.0%) and doctors (51.0%).

Table 1: Demographic Characteristics of Healthcare Professionals (N=253).

Variable	Category	N (%)
Gender	Male	83(32.8)
	Female	170(67.2)
Age	Under 39 years	94 (32.0)
	30-39 years	81 (45.5)
	40-49 years	41 (16.2)
	50-59 years	26 (10.3)
	60 years and over	11 (4.3)
City	Al-Zawia	161 (63.6)
	Triploi	36 (14.2)
	Sabratah	11 (4.3)
	Surman	21 (8.30
	Zuwarah	15 (5.9)
	Other	9 (3.6)
Academic Degree	Bachelor of Pharmacy	124 (49.0)
	Bachelor of Medicine	129 (51.0)
Years of Experience	Less than 5 years	94 (37.2)
	5-10 years	77 (30.4)
	11-15 years	37 (14.6)
	16-20 years	21 (8.3)
	More than 20 years	24 (9.5)

It should be noted that 63.6% of participants were recruited from Zawia city, where the authors' institution is located, indicating a potential sampling bias. Therefore, findings may not be generalizable to all healthcare professionals in Western Libya.

A comparison of the percentage of accurate responses for specific knowledge questions about UC and its treatment between doctors and pharmacists was shown in (Table 2). (adjusted α = 0.0083), differences in symptoms (P = 0.004), etiology (P = 0.003), and vitamin B9 deficiency (P = 0.007) remained statistically significant, whereas the difference in disease definition (P = 0.016) was no longer statistically significant. The two groups' levels of knowledge differed statistically significantly in a number of important areas.

In basic domains, doctors regularly showed a higher percentage of accurate answers than pharmacists. This included the kind of UC (88.3% vs. 76.5%, P = 0.016), common symptoms (89.1% vs. 73.9%, P = 0.004), and common cause (66.7% vs. 47.8%, P = 0.003). These results imply that doctors typically have a better basic knowledge of the aetiology and clinical presentation of UC.

On the other hand, concerning drug-related complications, a more alarming pattern emerged. While pharmacists showed a statistically significant higher correct response rate regarding the association between sulfasalazine and vitamin B9 deficiency (30.4% vs. 15.8%, P = 0.007), this still means that 69.6% of pharmacists and 84.2% of physicians were unable to identify this well-established, preventable drug-nutrient interaction. Rather than reflecting professional "superiority," these figures reveal a dangerous gap in pharmacovigilance knowledge among both groups, with major implications for patient safety.

P-values calculated using Z-proportion test. After Bonferroni correction for six comparisons, the adjusted significance level was set at α = 0.0083. Statistically significant differences (P < 0.0083) are indicated in **bold**. The difference in disease definition (P = 0.016) was not statistically significant after correction.

Table 2: Comparison of Correct Answers Between Pharmacists and Physicians on UC Knowledge Questions.

Question	Correct Answer	Pharmacists N (%)	Physicians N (%)	P-value
What is Ulcerative Colitis?	Chronic inflammatory bowel disease	95 (76.5)	114 (88.3)	0.016
What are the most common symptoms?	Chronic diarrhea, rectal bleeding, abdominal pain, weight loss, fever, fatigue, frequent defecation, loss of appetite	92 (73.9)	115 (89.1)	0.004
What is the common cause of UC?	An abnormal immune response	59 (47.8)	86 (66.7)	0.003
Which aminosalicylate is most commonly associated with vitamin B9 (folate) deficiency?	Sulfasalazine	58 (46.8)	20 (15.8)	0.007
How do aminosalicylates treat UC?	Reduce inflammation in the lining colon	100 (80.9)	107 (83.3)	0.622

DISCUSSION

This study provides a comprehensive assessment of the knowledge, among physicians and pharmacists in Western Libya concerning Ulcerative Colitis (UC) and its therapeutic management. The demographic characteristics of our cohort, which indicate a relatively young and predominantly female healthcare workforce, are consistent with evolving trends in healthcare professions across the region. [11] Our findings underscore the critical need for tailored educational strategies to optimize patient care in this context.

Our results demonstrate that physicians possess a significantly stronger foundational understanding of UC pathophysiology, including its definition, common symptoms, and etiology. This aligns with their primary role in diagnosing and initiating treatment for IBD patients, a pattern consistently observed in various healthcare settings globally. [12] The depth of clinical knowledge among physicians is paramount for accurate disease identification and the formulation of initial management plans, thereby establishing the cornerstone of effective UC care. [13]

On the other hand, a key result of this study is not "superiority" but rather universal inadequacy. Although pharmacists performed statistically better than physicians in recognising sulfasalazine-induced folate deficiency (30.4% vs. 15.8%, P = 0.007), the vast majority of both groups – 69.6% of pharmacists and 84.2% of physicians – failed to identify this preventable complication. This is not a reflection of specialised pharmacovigilance expertise; it is a patient safety crisis. Folate deficiency in UC patients can lead to macrocytic anaemia, cardiovascular complications, and neural tube defects in pregnant women. The fact that fewer than one in three pharmacists and fewer than one in six physicians can identify this interaction is unacceptable. [14,15]

The basis of UC treatment, aminosalicylates, are known to interact with the metabolism of folate, which calls for close observation and perhaps supplementation to avoid deficits that could worsen patient morbidity. [16-18] Given the high frequency of micronutrient deficiencies, such as folate, in IBD patients, which can have a substantial influence on their general health and quality of life, this discovery is especially relevant. [11,16,19] The discovered knowledge gaps between doctors and pharmacists are indicative of a larger problem in interprofessional healthcare collaboration rather than being exclusive to the Libyan setting. [17]

Studies from other regions have similarly reported variations in IBD-related knowledge among healthcare professionals, often influenced by their specific training and clinical responsibilities. [14,17] While physicians typically focus on disease pathology and treatment

algorithms, pharmacists often specialize in medication management, patient counseling, and the identification of drug-related issues. [12,13] The relatively comparable knowledge levels concerning the general mechanism of action of aminosalicylates and their overall impact on vitamins suggest a shared basic understanding of treatment principles, which can serve as a foundation for enhanced collaborative practices. [14]

The implications of these findings are substantial for enhancing UC patient care in Western Libya. The identified knowledge disparities necessitate targeted educational interventions. Continuing professional development programs should be designed to improve physicians' awareness of drug-induced nutritional deficiencies in IBD, while pharmacists could benefit from further training on the clinical presentation and diagnostic criteria of UC.[12,17] Fostering robust interprofessional collaboration, where both physicians and pharmacists actively leverage their complementary expertise, is crucial for holistic patient management, especially in a region where the burden of IBD is increasing and localized data remain limited. [11,20] Such collaborative models have been shown to improve medication adherence, enhance patient understanding, and ultimately optimize outcomes for individuals living with chronic conditions like UC. [13,17]

This study has several important limitations that affect the generalizability of its results. First, the sample was a convenience sample of healthcare professionals recruited primarily from Zawia city (63.6% of participants), where the authors' institution is located. No a priori power analysis was performed, and the response rate could not be calculated. Therefore, the results may not be representative of all healthcare professionals across Western Libya, and the title's reference to "Western Libya" should be interpreted cautiously. Second, the workforce in this sample was relatively young and inexperienced (67.6% with ≤10 years of experience), which may not reflect the knowledge of senior practitioners. Third, the study focused exclusively on knowledge assessment; clinical practices and attitudes were not evaluated. Fourth, the cross-sectional design prevents causal inferences. Future multicenter studies with probability sampling, adequate power, and representative geographic distribution are urgently needed to validate and extend these results.

CONCLUSION

This comparative cross-sectional study in Zawia, Western Libya revealed significant insights into the knowledge of healthcare professionals regarding Ulcerative Colitis and its management. The findings suggest potential professional differences consistent with training background: physicians demonstrated stronger knowledge of UC pathophysiology and clinical presentation, which is crucial for accurate diagnosis and initial treatment strategies. Conversely, while pharmacists performed relatively better than physicians (30.4% vs. 15.8%), the overall knowledge level regarding sulfasalazine-induced folate deficiency was dangerously low in both groups (≤30.4%). This indicates a systemic failure in pharmacovigilance education rather than "specialized expertise." Both professions require urgent, structured training to prevent preventable harm.

It is urgently recommended to establish mandatory continuing medical education workshops at the University of Zawia focusing on drug-related nutritional deficiencies in UC, targeting both physicians and pharmacists simultaneously. Given that >80% of physicians and >65% of pharmacists failed to identify sulfasalazine-folate interaction, routine folate monitoring protocols and supplementation guidelines must be implemented immediately for all patients receiving sulfasalazine therapy. Without these measures, preventable morbidity will persist.

REFERENCES

1. Ahmaida AI, Al-Shaikhi SA. Childhood inflammatory bowel disease in Libya: epidemiological and clinical features. Libyan Journal of Medicine. 2008 Jan 1;4(2):70-4.
2. Al-Mendalawi MD. A Descriptive Study of Inflammatory Bowel Disease in Eastern Regions of Libya: A Based Survey of Benghaziæs Hospitals. Libyan Journal of Medical Sciences. 2020 Jul 1;4(3):155.
3. Sharara AI, Al Awadhi S, Alharbi O, Al Dhahab H, Mounir M, Salese L, Singh E, Sunna N, Tarcha N, Mosli M. Epidemiology, disease burden, and treatment challenges of ulcerative colitis in Africa

and the Middle East. Expert review of gastroenterology & hepatology. 2018 Sep 2;12(9):883-97.
4. Ratajczak AE, Szymczak-Tomczak A, Rychter AM, Zawada A, Dobrowolska A, Krela-Kaźmierczak I. Does folic acid protect patients with inflammatory bowel disease from complications?. Nutrients. 2021 Nov 12;13(11):4036.
5. Kamel AY, Johnson ZD, Hernandez I, Nguyen C, Rolfe M, Joseph T, Dixit D, Shen S, Chaudhry N, Pham A, Rampertab SD. Micronutrient deficiencies in inflammatory bowel disease: An incidence analysis. European Journal of Gastroenterology & Hepatology. 2024 Oct 1;36(10):1186-92.
6. Gold SL, Manning L, Kohler D, Ungaro R, Sands B, Raman M. Micronutrients and their role in inflammatory bowel disease: function, assessment, supplementation, and impact on clinical outcomes including muscle health. Inflammatory Bowel Diseases. 2023 Mar 1;29(3):487-501.
7. Schreiber S, Panés J, Louis E, Holley D, Buch M, Paridaens K. Perception gaps between patients with ulcerative colitis and healthcare professionals: an online survey. BMC gastroenterology. 2012 Aug 15;12(1):108.
8. Park J, Cheon JH. Updates on conventional therapies for inflammatory bowel diseases: 5-aminosalicylates, corticosteroids, immunomodulators, and anti-TNF-α. The Korean journal of internal medicine. 2022 Jul 27;37(5):895.
9. London RE. The aminosalicylate-folate connection. Drug metabolism reviews. 2024 Jan 2;56(1):80-96.
10. Bertani L, Ribaldone DG, Bellini M, Mumolo MG, Costa F. Inflammatory bowel diseases: is there a role for nutritional suggestions?. Nutrients. 2021 Apr 20;13(4):1387.
11. Hashash JG, Elkins J, Lewis JD, Binion DG. AGA clinical practice update on diet and nutritional therapies in patients with inflammatory bowel disease: expert review. Gastroenterology. 2024 Mar 1;166(3):521-32.
12. Bhat S, Lyu R, Agarwal M, Becker M, Bloomfeld R, Bruining DH, Cohen BL, Ivanov M, Leighton JA, Stewart AP, Trocke L. Defining the roles of inflammatory bowel disease clinical pharmacists in the united states: a systematic review and national RAND/UCLA consensus. Inflammatory bowel diseases. 2024 Jun 1;30(6):950-9.
13. Choi DK, Rubin DT, Puangampai A, Lach M. Role and impact of a clinical pharmacy team at an inflammatory bowel disease center. Crohn's & Colitis 360. 2023 Apr 1;5(2):otad018.
14. Prasad SS, Duncanson K, Keely S, Talley NJ, Kairuz T, Holtmann GJ, Shah A, Walker MM. A role for primary care pharmacists in the management of inflammatory bowel disease? Lessons from chronic disease: a systematic review. Pharmacy. 2020 Nov 2;8(4):204.
15. Diyab A. *Management of inflammatory bowel disease by community pharmacists* (Master's thesis, University of Malta).
16. Vernia F, Ribichini E, Burrelli Scotti G, Latella G. Nutritional Deficiencies and Reduced Bone Mineralization in Ulcerative Colitis. Journal of Clinical Medicine. 2025 May 6;14(9):3202.
17. Hilley P, Wong D, De Cruz P. How Does an Integrated Pharmacist Add Value in the Management of Inflammatory Bowel Disease in the Era of Values-Based Healthcare?. Inflammatory Bowel Diseases. 2025 May;31(5):1419-29.
18. Turner D, Ruemmele FM, Orlanski-Meyer E, Griffiths AM, De Carpi JM, Bronsky J, Veres G, Aloi M, Strisciuglio C, Braegger CP, Assa A. Management of paediatric ulcerative colitis, part 1: ambulatory care—an evidence-based guideline from European Crohn's and Colitis Organization and European Society of Paediatric Gastroenterology, Hepatology and Nutrition. Journal of pediatric gastroenterology and nutrition. 2018 Aug;67(2):257-91.
19. Christensen C, Knudsen A, Arnesen EK, Hatlebakk JG, Sletten IS, Fadnes LT. Diet, food, and nutritional exposures and inflammatory bowel disease or progression of disease: an umbrella review. Advances in Nutrition. 2024 May 1;15(5):100219.
20. Syed S, Boland BS, Bourke LT, Chen LA, Churchill L, Dobes A, Greene A, Heller C, Jayson C, Kostiuk B, Moss A. Challenges in IBD research 2024: precision medicine. Inflammatory bowel diseases. 2024 May 1;30(Supplement_2):S39-54.