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Factors Influencing Received Social Support Among Emerging Adults with Inflammatory Bowel Disease: A Cross-Sectional Study

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Abstract

The majority of research among individuals with inflammatory bowel disease (IBD) focuses on perceived social support; a gap exists regarding the role of received social support in self-management enhancement. The purpose of this study was to examine specific contextual factors (individual, condition-specific, and emerging adulthood factors) that influence received social support (total, informational, emotional, and tangible) among emerging adults (ages 18–29) with IBD. A convenience sample of 61 emerging adults with a diagnosis of IBD was obtained. An association was found between high total received social support and several individual factors such as being closer to the younger end of the age range (ages 18–29), being married, and fully employed. When controlling for time since diagnosis and symptom interference, high tangible received social support was associated with the use of immunomodulator and biological medications. Emerging adulthood factors were not associated with total or any types of received social support. Future research could examine differences between types of social support and self-management behaviors. These findings contribute a new direction for intervention development with a focus on individual and condition-specific factors to enhance received social support and ultimately health outcomes for individuals with IBD.

Conflicts of Interest
None declared

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Keywords

Colitis; Ulcerative; Crohn disease; Inflammatory bowel diseases; Self-management; Social support; Young adult

Introduction

Inflammatory Bowel Diseases (IBD); ulcerative colitis and Crohn's disease) are chronic diseases of the gastrointestinal system. Patients with IBD experience periods of flares (including symptoms of diarrhea, abdominal pain, cramping, bloody stool, and fatigue) and remission (Farrell et al., 2016). The unpredictable nature of IBD creates an environment in which "the bowels rule life" (Pihl Lesnovska et al., 2016). To cope with this encompassing condition, receiving social support can be beneficial by promoting engagement in social activities and improving self-management behaviors, leading to increased periods of remission and health-related quality of life (Likert-scale self-report of physical, emotional, and social health; Guyatt et al., 1989; Pihl Lesnovska et al., 2016; Plevinsky et al., 2016).

Background

Received social support refers to aid a person reports receiving from others (Cohen et al., 2000) and can be separated into types: informational, emotional, and tangible (Uchino, 2009). Informational received social support includes providing information and giving advice; emotional received social support includes actions intended to make someone feel cared for such as encouragement and comfort; and tangible received social support consists of providing physical support such as assistance and reminders. As conceptualized in the Individual and Family Self-Management Theory (Ryan and Sawin, 2009), increased received social support can facilitate self-management behaviors which in turn contributes to better quality of life and improved health outcomes (DiMatteo, 2004; Fletcher et al., 2008; Swarup et al., 2017). Previous research within the IBD population primarily focuses on total social support and perceptions of support availability (Katz et al., 2016; Moss et al., 2010).

Dur et al. (2014) found that 93% of participants with Crohn's disease identified social support as an important determinant of health. Furthermore, women and young adults with IBD also acknowledged social support as a vital component to daily functioning and their ability to cope with IBD (Fletcher et al., 2008; Lynch & Spence, 2008). Social support may have physiological benefits by slowing down disease progression and influencing parasympathetic activity for IBD patients (Camara et al., 2011; Maunder et al., 2012). Identifying factors that enhance received social support is important because social support is beneficial for improving self-management behaviors and health-related quality of life among adults with chronic conditions (Uchino, 2004; Uchino et al., 2012). Therefore, the purpose of this study was to examine the self-management contextual factors of individual, condition-specific, and emerging adulthood that contribute to received social support among emerging adults with IBD.

Literature Review

Self-Management Contextual Factors: Individual Factors

Individual self-management factors of interest included age, sex, marital status, employment, and education. The relationship between age and received social support is not fully understood because some studies report greater social support among older adults (Jason, 2007; Luong et al., 2011); whereas others indicate that younger adults experience greater social support (Williamson & O'Hara, 2017). Age may be influential among individuals with IBD because those diagnosed at a younger age typically experience greater disease complications (Torres et al., 2016). Females typically receive more emotional social support than males (Williamson & O'Hara, 2017), which may be due to women being more likely to express emotional needs and seek social support (Norberg et al., 2006; Simon et al., 2004). Being employed and having a higher educational level may influence received social support by providing greater access to supportive resources (Arora et al., 2007; Gudbergsson et al., 2009; Nilsson et al., 2013; Nordgren & Soderlund, 2017). However, most of the previous social support research cited has been conducted with older populations; this leaves a gap in the literature regarding individual factors of age, sex, marital status, employment, and education within the emerging adult population. Similar research is needed to characterize younger adults with IBD who are likely to have unique social support needs based on their individual and clinical characteristics (Davis et al., 2015; Trepte et al., 2015).

Self-Management Contextual Factors: Condition-Specific Factors

Condition-specific self-management factors are distinct to the condition and for the present study include type of IBD, time since diagnosis, symptoms (including prevalence, severity and interference), current medication use, and surgeries. Because little self-management work has been done specifically on emerging adults with IBD, it is necessary to draw upon research on other chronic conditions. Related literature on "time since diagnosis" by Arora et al. (2007) indicated that when individuals (mean age 44) were newly diagnosed with cancer, they experienced an increase in receiving social support. However, received social support reduced as time since diagnosis increased (Arora et al., 2007). Disease severity (including symptoms, current medication types, and surgeries), although not examined in relationship to received social support among IBD patients, is related to increased hospitalizations and disease complications among IBD patients (Guizzetti et al., 201; Limsrivilai et al., 2017; Torres et al., 2016; Waljee et al., 2017). Even though the current social support literature does not focus on condition-specific factors within the IBD population, there are reasons to hypothesize that condition-specific factors may influence received social support. For instance, taking biological medications, typically infusions or injections to treat moderate/severe IBD, may lead to an increase in tangible social support such as someone driving to the infusion center or helping inject medication. Therefore, as disease severity increases and others become more aware of the disease, an emerging adult with IBD may receive more social support compared to an emerging adult whose disease is less visible. The relationship between condition-specific factors and types of social support among IBD emerging adults needs more investigation and was therefore pursued in the present study.

Self-Management Contextual Factors: Emerging Adulthood Factors

Emerging adults are in a life stage that is accompanied by starting college, work, beginning families, and transitioning to adulthood and, thus, experience developmental factors that may influence received social support (Arnett, 2000, 2015; Arnett et al., 2014). These developmental factors include: 1) possibilities/optimism: when hopes flourish and people have an unparalleled opportunity to transform their lives; 2) instability: in love, work, and place of residence; 3) identity explorations: answering the question “who am I?” and trying out various life options, especially in love and work; and 4) feeling in-between: in transition, neither adolescent nor adult (Arnett, 2000, 2015). The unique needs and challenges of the emerging adulthood population has been introduced in the IBD literature by examining care transitions (Trivedi & Keefer, 2015); however, few studies have examined how emerging adulthood could influence other factors such as the amount of social support received. Emerging adults in transition may have a smaller support network from which to obtain social support (Benson & Elder, 2011; Heinze et al., 2015; Mattanah et al., 2010; Seiffge-Krenke et al., 2013). Although the individual factor of age has some overlap with emerging adult factors, the developmental stage of emerging adulthood may influence received social support differently than age because of developmental needs. Therefore, both age and emerging adulthood were proposed to play a unique role in social support.

In summary, social support has the potential to influence engagement in social activities, self-management behaviors, remission, and health-related quality of life (Pihl Lesnovska et al., 2016; Plevinsky et al., 2016). Yet, little is known regarding the self-management contextual factors (individual, condition-specific, and emerging adulthood) that influence received social support among emerging adults with IBD. Previous literature has primarily examined individual factors and received social support among middle age and older adults, but research has not focused on emerging adults. In addition, there is a significant gap in knowledge regarding the role of condition-specific and emerging adulthood factors. Examining the relationship between individual, condition-specific, and emerging adulthood factors provide a foundation for identifying individuals who may be in need of supportive interventions.

Methods

Aims

The aim of the study was to examine the individual, condition-specific, and emerging adulthood self-management contextual factors that may influence components of received social support among emerging adults with IBD. This study had three research questions examining the relationship between self-management contextual factors and the process components of received social support:

Research Question 1: Which self-management **individual factors** (age, sex, marital status, employment, education) are associated with received social support (total, informational, emotional, and tangible)?

Research Question 2: Which self-management **condition-specific factors** (type of IBD, times since diagnosis, symptoms, medication types [e.g., biological and

immunomodulator medications], and surgeries) are associated with received social support (total, informational, emotional, and tangible)?

Research Question 3: Which self-management **emerging adulthood factors** (possibilities/optimism, instability, identity exploration, and feeling in-between) are associated with received social support (total, informational, emotional, and tangible)?

Design

This study used a cross-sectional design.

Sample

A convenience sample of 61 adults, ages 18 – 29 years, with a self-reported healthcare provider diagnosis of IBD (ulcerative colitis or Crohn’s disease) were included in this study. Inclusion criteria were being between the ages of 18 – 29 years, self-reporting of a healthcare provider diagnosis of ulcerative colitis or Crohn’s disease, currently prescribed medications to manage their IBD, lived in the United States (primarily Eastern and Midwestern), understood written English, and had access to and ability to use the internet. Potential participants were excluded if they were hospitalized within the past month or currently pregnant.

Data Collection

Participants were recruited from an online database of participants who expressed interest in participating in research studies (ResearchMatch), a social networking site (Facebook), or had a friend referral to the study from January 2018 - February 2018. Institutional review board approval was obtained from the investigators’ university. Potential participants received an email or viewed a Facebook post/advertisement with a link to the survey. The first page of the online survey contained an introduction to the study, instructions, and the informed consent. By continuing with the survey, participants indicated their consent. Data were collected using Qualtrics, a secure online survey software. Participants were provided with an email address and phone number to contact the researchers, if needed.

A total of 61 individuals participated in the study. Because recruitment occurred using social networking and word of mouth, an overall response rate could not be determined because an unknown number viewed the recruitment information. Twenty-one participants were excluded from data analysis due to a lack of data on primary study outcomes.

Measures

Self-management individual factors—Individual factors were investigator-developed demographic data specific to the participant and included age (calculated based on the individuals’ birthdate), sex (male or female), marital status (single or married/domestic partnership), employment (full-time employed, part-time employed, and unemployed/student), and education (high school or less, some college, completed college, and graduate or professional degree). Individual measures were pre-tested using a cognitive interviewing procedure (Anonymous, 2018). Participants provided feedback on the questionnaires using

“think out loud” procedures and concurrent verbal probing. Modifications were made to the questionnaires based on four improvement areas (clarity, cognitive recall burden, timeframe, and question relevance).

Self-management condition-specific factors—Condition-specific factors are characteristics related to the IBD and include symptoms, type of IBD (ulcerative colitis/Crohn’s disease), time since diagnosis (reported as number of years since diagnosis), medications currently using (biologics, immunomodulators, corticosteroids, and aminosalicylates), and surgeries for IBD (total number of IBD-related surgeries).

Symptoms (prevalence, severity, and interference) were measured using a Cancer Symptom Inventory (Given et al., 2008) that was modified to 15 symptoms associated with IBD including: diarrhea, constipation, abdominal pain, abdominal tenderness, abdominal cramps, bloating, passing gas, blood in stool, weight loss, weight gain, reduced appetite, increased appetite, nausea or vomiting, fatigue, and fever. Participants were asked if they experienced the symptom within the past two weeks (prevalence: yes/no). If participants experienced the symptom, they rated the severity (symptom at its worst) and interference (how much the symptom interfered in daily activities) on a 0 – 9 point scale. Prevalence of symptoms were reported as an average number of symptoms experienced (potential range: 0 – 15). Severity ratings were reported as a mean for all 15 symptoms, with higher scores indicating greater symptom severity (potential range: 0 – 9). Interference ratings were also reported as the mean for all 15 symptoms, with higher scores indicating greater symptom interference with daily activities (potential range: 0 – 9). The modified Cancer Symptom Experience Inventory was pre-tested prior to use.

Self-management emerging adulthood factors—The 8-items short form of the Inventory of Dimensions of Emerging Adulthood (IDEA) measures psychological issues associated with emerging adulthood (Baggio et al., 2015). Participants were asked to think of a five-year period and respond to questions such as: “is this period of your life a time of many possibilities?” on a 4-point Likert scale (strongly disagree, somewhat disagree, somewhat agree, and strongly agree). The 8-item short form contains four (of the 5) dimensions of emerging adulthood. These dimensions included possibilities/optimism, instability, identity exploration, and feeling in-between. Participants received a score for each dimension; a higher dimension score indicates that an emerging adult more strongly agrees that he or she was experiencing this dimension of emerging adulthood (potential ranges: 2 – 8). The short form demonstrated construct validity with adulthood markers (Baggio et al., 2015) and Cronbach’s alpha subscales in the current study ranged from 0.65 to 0.86.

Received social support—Received social support was measured by the Inventory of Socially Supportive Behaviors (ISSB) (Stokes & Wilson, 1984). The ISSB is a 40-item self-report scale in which participants rate how often activities occurred during the past four weeks such as someone “provided you with some transportation” or “told you who you should see for assistance.” Subscales measure specific types of support: informational support (guidance; 14 items), emotional support (14 items), and tangible support (12 items) (Stokes & Wilson, 1984). The instrument uses a 5-point Likert scale (1=not at all, 2=once or

twice, 3=about once a week, 4=several times a week, and 5=about every day). The original instrument had an overall Cronbach's alpha of 0.93 (Barrera et al., 1981). The scale was summed into a total received social support (potential range: 40 – 200) score as well as subscales of: informational support (potential range: 14 – 70), emotional support (potential range: 14 – 70), and tangible support (potential range: 12 – 60) with a higher number indicating greater received social support. The analysis examined the total received social support score as well as the individual subscales. The descriptive analysis included the mean scores to assist in interpretation.

Ethical Considerations

Institutional review board approval was obtained from the investigators' university. The first page of the online survey contained an introduction to the study, instructions, and the informed consent. By continuing with the survey, participants indicated their consent. Participants were provided with an email address and phone number to contact the researchers, if needed.

Data Analysis

Data analysis was performed using Stata statistical software version 15.0. Eighty-two individuals met inclusion/exclusion criteria. Data were checked for completeness; twenty-one individuals were excluded from analysis due to not completing social support measures. The level of significance was set at $\alpha = 0.05$. Descriptive analyses of the results were performed using numbers and percentages for categorical variables (sex, marital status, employment status, education, type of IBD, and medication type) and mean and standard deviation for continuous variables (age, time since diagnosis, previous surgeries, symptom prevalence, symptom severity, symptom interference, possibilities/optimism, instability, identity exploration, feeling in-between, and received social support).

The same multivariable linear regression procedures were used to answer each of the research questions. Because the goals were to build a parsimonious model for each research question, a modified purposeful selection procedure was used (Hosmer et al., 2013). Univariable linear regressions were conducted and variables with a p-value of <0.25 were included in an initial multivariable model. Variables not reaching the traditional level of significance ($p < 0.05$) were removed. Once the main effects model was determined, the next step involved checking for functional forms and interactions among independent variables (individual, condition-specific, and emerging adulthood factors). Finally, the model fit was evaluated using residual diagnostics and adjusted R^2 . Heteroscedasticity robust standard errors were used to guard against non-constant residual variance.

Results

Descriptive Statistics

Table 1 presents the demographic and disease characteristics, which are conceptualized as the individual, condition-specific, and emerging adulthood factors. The mean age of participants was 24.7 ($SD = 2.9$) with a range of 18 – 29. The majority of participants were female ($n=55$, 90%) and single ($n=47$, 77%). Sixty-four percent ($n=39$) of participants had a

diagnosis of Crohn's disease; whereas 35% had a diagnosis of ulcerative colitis ($n=22$). Participants were recruited from Facebook (67%), ResearchMatch (25%) and word of mouth (8%). No differences existed between study variables (i.e., received social support, individual, condition-specific, or emerging adulthood factors) based on recruitment site (Facebook compared to ResearchMatch). Overall, emerging adults with IBD reported obtaining social support between "once or twice" (in the past 4 weeks) and "about once a week" ($M = 2.5$, $SD = 0.7$). Of the types of social support, participants received the most amount of emotional social support ($M = 3.2$, $SD = 1.0$) and the least amount of tangible social support ($M = 1.8$, $SD = 0.6$).

Research Question 1: Individual Factors and Received Social Support

In the multivariable analysis, individual factors of self-management were associated with total received social support and emotional social support (Table 2). Specifically, being younger in age ($p = 0.001$), being married ($p = 0.039$), and being employed (compared to being unemployed or a student, $p = 0.007$) were significantly associated with increased total received social support ($F(4, 56) = 4.43$, $p = 0.004$, $R^2 = 0.24$, adjusted $R^2 = 0.19$). Being married ($p = 0.001$) and younger in age ($p = 0.033$) were associated with greater emotional social support ($F(2, 58) = 6.72$, $p = 0.002$, $R^2 = 0.19$, adjusted $R^2 = 0.16$). Individual factors were not significantly associated with the subscales of informational or tangible social support.

Research Question 2: Condition-Specific Factors and Received Social Support

Condition-specific factors were associated with one type of received social support (Table 3). Condition-specific factors were not significantly associated with total, informational, or emotional received social support. Multivariable analysis indicated that the use of immunomodulators ($p < 0.001$), the use of biologics ($p = 0.001$) and the interaction between immunomodulators and biologics ($p = 0.002$) were associated with increased tangible received social support while controlling for time since diagnosis ($p = 0.088$) and symptom interference ($p = 0.352$) ($F(5, 55) = 7.59$, $p < 0.000$, $R^2 = 0.41$, adjusted $R^2 = 0.35$). Time since diagnosis and symptom interference were kept due to clinical considerations. The interaction indicates that the impact of biologics on received tangible social support was increased in the presence of immunomodulator medications (Table 4).

Research Question 3: Emerging Adulthood Factors and Received Social Support

Linear regression analyses indicated that emerging adulthood factors of possibilities/optimism, instability, identity exploration, and feeling in-between were not statistically significantly associated with total social support or subscales.

Discussion

The purpose of this study was to examine self-management contextual factors (individual, condition-specific, and emerging adulthood) that influence received social support among emerging adults with IBD. The main study findings within a sample of predominantly single females with IBD included: 1) individual factors of younger end of the age range (18–29), being married, and full-time employment were related with increased total received social

support; 2) the condition-specific factors of immunomodulator medications, biological medications, and the interaction between immunomodulators and biological medications were related to increased tangible social support when controlling for time since diagnosis and symptom prevalence; and 3) emerging adult factors were not associated with any aspect of received social support.

The individual and condition-specific factors associated with social support varied based on the type of social support. For example, condition-specific factors were only related to the tangible aspect of received social support. Previous IBD literature has primarily focused on social support in general; these findings indicate that the contextual self-management factors that influence received social support vary based on the type of social support. Although total received social support may be helpful for obtaining an overall assessment of level of social support, specific types of social support are beneficial for targeting intervention development and evaluation.

Regarding research question 1, the self-management individual factors associated with total and emotional received social support were primarily in alignment with previous social support research. Nordgren and Soderlund (2017) found that being married was associated with more received social support than being single, specifically total and emotional received social support. Within the sample, those who were employed compared to those who were unemployed or a student typically reported receiving more social support, which is consistent with previous research on older adults (Arora et al., 2007; Gudbergsson et al., 2009; Nilsson et al., 2013; Nordgren & Soderlund, 2017). Individuals who are married and employed full-time may have access to larger support networks for access compared to single and unemployed adults. Although previous literature found mixed results regarding received social support and age, this study aligns with research in that a younger chronological age was associated with greater received social support (Williamson & O'Hara, 2017). One hypothesized reason for this relationship from Scholz et al. (2012) is that younger adults typically have access to more sources of support and larger support networks than older adults; however, older adults typically report higher quality of support and more meaningful support compared to younger adults.

The condition-specific factors of self-management (research question 2) produced some unexpected findings. Individuals with higher disease severity (condition-specific factors such as greater symptom interference and increased surgeries) were assumed to receive more social support; however, condition-specific factors did not demonstrate statistically significant relationships with most types of received social support (total, informational, and emotional). The condition specific factor of medication type (immunomodulators, biologics, and the interaction between immunomodulators and biologics) was associated with increased tangible social support when controlling for time since diagnosis and symptom prevalence. Using immunomodulators had the greatest relationship with tangible received social support perhaps due to the special considerations that occur while using immunomodulators. Individuals taking immunomodulators may need to obtain vaccinations prior to medication initiation, and while taking the medication they may be monitored for drug metabolite levels (Axelrad et al., 2016; Bär et al., 2013). These special considerations may lead to greater tangible social support than individuals on other medications. Of note,

time since diagnosis and symptom interference were included as control variables within the condition-specific factors of self-management since these factors may also influence levels of tangible social support. The condition-specific factor of medication type influenced tangible received social support within this sample.

For the emerging adulthood factors of self-management (research question 3), the majority of individuals in the present study agreed or strongly agreed with the factors of emerging adulthood; yet, emerging adulthood factors were not significantly related to any aspect of received social support. Previous research among emerging adults focused on perceptions of social support and did not include developmental status (Martínez-Hernández et al., 2016; Pettit et al., 2011); the current study expanded the literature by focusing on received social support and incorporating emerging adulthood factors.

Future research is needed in many areas of received social support. This study, like other social support research, assumed that higher received social support is beneficial. It may be that ideal levels of received social support are situational, contextual, and/or person dependent. For instance, individuals with active disease flare may have an increased need for social support compared to those in remission. Researchers have identified a need to match the level of desired support with the support that is received, known as support gap literature (High & Crowley, 2018; Song et al., 2013). In other words, some emerging adults with IBD may desire a higher amount of tangible social support compared to other emerging adults with IBD. Thus, determining levels of desired support promotes a precision health approach to assessing and understanding social support. Finally, examining the characteristics of the support messages can help identify quality of social support. For instance, high person-centered messages, which encourage elaborating on thoughts and feelings, represent high-quality emotional support messages (Bodie & Burleson, 2008). This inquiry could be performed using dyadic research involving both the individuals providing the support (e.g., friends, family, or others with IBD) and support receivers (e.g., emerging adults with IBD).

Limitations

The current study only examined levels of received support. Research is needed to determine optimal levels of informational, emotional, and tangible social support in general and among emerging adults with chronic conditions. Furthermore, the study did not account for differences in the quality of social support. A focus on quality of the support message and the support providers' perspective would enhance IBD social support research.

Further, the study has limited generalizability due to the small sample size and the cross-sectional design. The sample was predominantly educated females diagnosed for an average of 6.4 years. Emerging adults who were recently diagnosed and experience greater symptom severity and interference may have a different relationship between individual and condition-specific factors and received social support. Selection bias may have occurred in which healthier individuals with greater levels of social support were more willing to complete the survey. Finally, the received social support measurement used within the study was a general measure that may not have captured the support items that are specific to IBD.

Implications for Practice

Increased social support can influence self-management behaviors and health-related quality of life among adults with chronic conditions (Uchino, 2004; Uchino et al., 2012). Among emerging adults with IBD, received social support may be beneficial for improving medication adherence (Authors, in press). Therefore, healthcare providers can promote social support and become aware of the demographic and condition-specific factors that may be associated with decreased social support. Patients who are older emerging adults, single, unemployed, and not prescribed biological or immunomodulatory medications may need additional supportive resources. Nurses can provide recommendations for obtaining social support from both online and in-person services (e.g., the Crohn's and Colitis Foundation). Nurses and other healthcare professionals can seek to improve social support among emerging adults with IBD.

Conclusion

In conclusion, the population of emerging adults with IBD has been largely overlooked in the research literature. This work begins to shed light on factors that influence the various aspects of received social support, providing the foundation for future work to enhance self-management health behaviors, such as diet and medication adherence. Among the sample of predominantly educated females, individual factors of age, marital status, and employment were shown to influence total received social support. Age and marital status were related to increased emotional received social support. Currently taking immunomodulators and biologics, when controlling for time since diagnosis and symptom prevalence, were associated with increased tangible received social support. Finally, emerging adulthood factors were not associated with received social support. Thus, social support interventions could be targeted towards individuals at-risk of lower social support levels (e.g., emerging adults closer to the older end of the age range, unmarried, and unemployed individuals).

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Table 1

Demographics and clinical characteristics (n=61)

Characteristic	N	%
Sex		
Male	6	9.8
Female	55	90.2
Marital Status		
Single	47	77.1
Married/domestic partnership	14	22.9
Employment Status		
Full-time employed	30	49.2
Part-time employed	10	16.4
Unemployed or student	21	34.4
Education		
High school or less	10	16.4
Some college	16	26.2
Completed college	22	36.1
Graduate or professional degree	13	21.3
Type of IBD		
Ulcerative Colitis	22	36.1
Crohn's disease	39	63.9
Medication type		
Aminosalicylates	22	36.1
Biologics	37	60.7
Corticosteroids	11	18.0
Immunomodulators	16	26.2
	Mean (SD)	Potential range
Age (years)	24.7 (2.9)	18 – 29
Time since diagnosis (years)	6.4 (4.8)	0 – 29
Number of previous surgeries	0.6 (1.4)	0 – 8
Symptoms		
Symptom prevalence (average number of symptoms experienced)	5.9 (3.1)	0 – 15
Mean symptom severity	1.8 (1.3)	0 – 9
Mean symptom interference	1.1 (0.9)	0 – 9
Emerging adulthood factors^a		
Possibilities/optimism	6.8 (1.4)	2 – 8
Instability	6.9 (1.3)	2 – 8
Identity exploration	6.7 (1.4)	2 – 8
Feeling in-between	6.5 (1.5)	2 – 8

Total received social support^b	2.5 (0.7)	1 – 5
Informational received social support	2.4 (0.9)	1 – 5
Emotional received social support	3.2 (1.0)	1 – 5
Tangible received social support	1.8 (0.6)	1 – 5

^aEmerging adults indicated their agreement with experiencing the features associated with emerging adulthood by responding to a 4 level Likert item with options from strongly disagree, somewhat disagree, somewhat agree, and strongly agree. A higher score indicates experiencing more of the dimensions associated with emerging adulthood.

^bEmerging adults indicated how often they received social support within the past month. Responses were on a 5-point Likert scale and included: not at all (=1), once or twice in the past month (=2), about once a week (=3), several times a week (=4), or about every day (=5). A higher score indicates that emerging adults received social support more often. Sum scores were used in linear regression analysis: total received social support ($M = 99.4$, $SD = 29.7$), informational received social support ($M = 33.0$, $SD = 12.4$), emotional received social support ($M = 45.3$, $SD = 14.3$), and tangible received social support ($M = 21.1$, $SD = 6.9$).

Table 2

Individual factors and received social support

Variable	Total received social support		Received emotional social support	
	Coeff. (95% CI)	P value	Coeff. (95% CI)	P value
Marital Status (ref: single)				
Married/domestic partnership	18.2 (1.0, 35.5)	0.039	14.4 (6.1, 22.8)	0.001
Employment Status (ref: full-time employed)				
Part-time employed	-3.8 (-23.6, 16.0)	0.703		
Unemployed	-24.1 (-41.3, -6.8)	0.007		
Age (years)	-4.8 (-7.6, -2.0)	0.001	-1.4 (-2.6, -0.1)	0.033
Constant	104.1 (92.9, 115.3)	0.000	42.0 (38.1, 45.9)	0.000

Note: Age was centered at the mean (mean: 24.7).

Table 3

Condition-specific factors and received social support

Variable	Received tangible social support	
	Coeff. (95% CI)	P value
Medication types		
Biologics (ref: no biologic)	5.4 (2.4, 8.5)	0.001
Immunomodulators (ref: no immunomodulator)	19.8 (17.6, 21.9)	0.000
Biologics x Immunomodulators	-19.0 (-24.6, -13.4)	0.000
Time since diagnosis (months)	0.02 (-0.003, 0.04)	0.088
Symptom interference	1.1 (-1.3, 3.5)	0.352
Constant	17.0 (15.2, 18.8)	0.000

Note: The following variables were centered at their means: time since diagnosis (mean: 76.3 months) and symptom interference (mean: 1.1).

Table 4

Interaction between Immunomodulators and Biological Medication for Tangible Received Social Support

Medication Status	Received tangible social support (95% Confidence Interval)
Immunomodulator only	36.7 (36.0, 37.5)
Immunomodulator plus biologic	23.2 (19.1, 27.3)
Biological only	22.4 (19.9, 24.9)
Not immunomodulator or biologic	17.0 (15.2, 18.8)

Note: Adjusted for time since diagnosis (centered at 76.3) and symptom interference (centered at 1.1). Emerging adults on immunomodulator medication alone have the greatest receipt of tangible social support.

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