# Study of the Quality of Life in Egyptian University Students with IBS

**Nancy Ahmed** ( ziad.emad90@yahoo.com )
Mansoura University
**Hala El Wakil**
Alexandria University
**Ramy Agwa**
Mansoura University
**Mohamed Ahmed**
Ministry of Health and Population

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## Abstract

# Background/ Purpose:

The assessment of QoL grew, yet little attention had been given to QoL of university students. We aimed to study quality of life in different Egyptian university students, find the prevalence of irritable bowel syndrome among university students and the relation of IBS to QoL.

# Methods:

656 students were included in the study 82 from each faculty, two questionnaires (quality of life and ROME IV) were handed over to students of Faculties of Medicine and Education in Mansoura, Alexandria, Port Said and Assiut Universities.

# Results:

Only 365 students completed the questionnaire, Medical students had significantly lower QoL than students in Faculty of Education (median score of QoL in medical students = 127 vs 152 in non-medical students). Male students (median score of QoL = 142) had higher QoL than female students (median score of QoL = 134). Younger students had higher QoL scores in all dimensions than older students (median score of QoL = 147 vs 129). Only 40 students had IBS (11%).

# Conclusion:

Medical students had significantly lower QoL than non-medical students. Male and younger students had significantly higher QoL than female and older students respectively. Prevalence of IBS among students was 11%.

## Introduction:

From the 70s, the assessment of QoL grew, yet little attention has been given to QoL of university students during their educational process, which is recognized as a high-stress period. Factors such as anxiety can lead to poor academic performance and illness [1]. IBS is considered one of the most important stress-related diseases and the most prevalent disorder of gut-brain interaction[2]. The impact of IBS on QoL and the individual's functioning has been studied through various disease-specific instruments that are now available and widely used in clinical trials. They are used to measure changes in QoL in patients with IBS especially after treatment in order to individualize a proper therapeutic strategy[3]. It is suggested that IBS interferes with the physical aspects of QoL including daily activities

and work productivity and aggravates patients' psychological burden if comorbid depression is present. Thus QoL level of those individuals could be significantly reduced[4].

# Methods:

### Design:

This is a Cross-sectional study.

### Setting:

Faculties of Medicine and Education in Mansoura, Alexandria, Port Said and Assiut Universities during one-year period starting from April 2020.

The whole study design was approved by the Institutional review board (IRB), Faculty of Medicine, Mansoura University with code number MS.19.05.632. Completing the questionnaire considered as acceptance to share in the study.

### *Study Population:*

656 students were included in the study 82 from each faculty, two questionnaires (quality of life and ROME IV) were handed over to students of Faculties of Medicine and Education in Mansoura, Alexandria, Port Said and Assiut Universities. All students were asked to fill out a Qol questionnaire and fill out an IBS questionnaire (only if they were suffering from a recurrent abdominal pain) after writing their personal data and 2 scoring systems were put to determine the QoL level and to detect students with IBS. The quality of life questionnaire consists of 100 items, with the following choices: yes, to some extent and no (or rarely happens), where yes = 2 points, to some extent = 1 point and no = 0 points. The scores were calculated to determine the level of quality of life, ranging from 0 to 200, where 0-50 points reflect low, 51-100 points reflect moderate, 101-150 points reflect good, and 151-200 points reflect high quality of life[5]. Students who reported having recurrent abdominal pain were asked to answer the IBS questionnaire which includes questions based on ROME IV criteria. A scoring system was put where score > 20 means that the student likely suffers from IBS, score from 10 to 19 means that the student may suffer from IBS, and the student is considered to have IBS if he or she meets the diagnostic criteria of ROME IV for IBS and score < 10 means that the student may not have IBS and other conditions should be considered[6].

### Statistical Analysis:

Data were entered and analyzed using IBM-SPSS software (IBM Corp. Released 2019. IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp).

### Role of the Funding Source:

No external funding was received for this study.

# Results:

This study included 656 university students, of whom 365 students (55.6%) completed the QoL questionnaire with all of its dimensions. QoL of Faculty of Medicine students were significantly lower than QoL of students in Faculty of Education in all dimensions (median score of QoL in medical students = 127 vs 152 in non-medical students) (p value = < 0.001). Male students had statistically significant higher scores in the health dimension, personality dimension and in the total QoL scores than females (median score of QoL = 142 vs 134) (p value = < 0.001). Younger students (≤ 21 years) had higher QoL scores in all dimensions than older students (> 21 years) (median score of QoL = 147 vs 129) (p value = < 0.001). Out of the 365 students who completed the QoL questionnaire, 40 students were found to have IBS according to ROME IV criteria with a prevalence of 11%. Prevalence of IBS among medical students was estimated at 13.86% (28 of 202) while in non-medical students was 7.36% (12 of 163). Prevalence of IBS among medical students was significantly higher than in non-medical students (p value = 0.048). Prevalence of IBS in female students was 14.8% (29/196) and in male students was 6.5% (11/169). This showed a significant higher prevalence of IBS in female students than in male students (p value = 0.011). The median age of non-IBS students was 21 (18–26) while the median age of IBS students was 23 (19–25), thus IBS prevalence was significantly higher in older students than in younger ones (p value = < 0.001). 87.1% (283/325) of the non-IBS group had good to high QoL while 12.9% (42/325) of them had low to moderate QoL. On the other hand 75% (30/40) of the IBS group had good to high QoL whereas 25% (10/40) of them had low to moderate QoL. IBS students had statistically significant lower QoL compared with non-IBS students (p value = 0.039).

# Discussion:

The youth are the cornerstone of the society whose academic achievements contribute to the progress of any nation[7], thus university students were our targeted sample size.

The concept of quality of life (QoL) is used to express the general wellness of a person or a group of people, therefore it can be considered a reflection of happiness[8].

The aim of this study is to measure and compare quality of life in different Egyptian university students and to find the prevalence of irritable bowel syndrome among university students and the relation of IBS to QoL.

This study included 656 university students, of whom 365 students (55.6%) completed the QoL questionnaire with all of its dimensions, 202 of them (55.3%) were medical students and 163 were non-medical students (44.7%) **(table 1).**

Our study proved that QoL of Faculty of Medicine students were significantly lower than QoL of students in Faculty of Education in all dimensions (P value = < 0.001) **(table 2).**

This in concordance with **Noreen et al. 2021** who found that non-medical students scored significantly higher QoL scores in comparison with medical students (P value = < 0.05)[9].

**Pagnin and De Queiroz 2015** found that medical students exhibited poorer psychological well-being and social relationships than age-matched young people in the general population. They had a lower QoL in comparison to young general population with a significant proportion of the students had a low quality of life in all domains[10].

In contrast to our findings, a study by **Latas et al. 2014** found that medical students in comparison to the non-medical group had significantly higher scores[11].

Also, **Henning et al. 2012** results showed that medical students perceived their QoL as better or equivalent to other non-medical students' group[12].

That may be due to the varied study population and ethnicities.

In our present study, 196 students were females (53.7%) and 169 students were males (46.3%). We found that male students had statistically significant higher scores in the health dimension, personality dimension and in the total QoL scores (p value = < 0.001). Males also had higher scores in the external standard dimension but the difference was statistically insignificant (p value = 0.235) **(table 3).**

In agreement with our results, **Latas et al. 2014** found that male students generally perceive their QoL as better than females[11]. Also, **Messina et al. 2016** reported that female students obtained lower scores of SF-36 than males[8].

Contrary to our study, **Noreen et al. 2021** found that female students significantly scored high on QoL compared to male students ($p < 0.05$), while male students scored higher on psychological distress ($p < 0.05$)[9].

Furthermore, **Acheampong et al. 2017** documented that there was no significant difference in quality of life scores for male and female pharmacy students in University of Ghana[13].

Those negative results might be attributed to the psychological distress males develop as they are expected to bear greater responsibility of the future for their families in particular and society in general. Also many of male students had to work during university years especially those in the middle and low socioeconomic class which could have a negative impact on their mental and physical health.

In the present study, ages of the students ranged from 18 to 26. Our results showed a statistically significantly higher health dimension, personality dimension, external dimension and total QoL scores in younger (≤ 21 years) vs. older (> 21 years) (p = < 0.001) **(table 4).**

That in concordance with, **Raj et al. 2000**[14] and **Sabbah et al. 2013**[15].

Opposite findings were reported by **Pitil et al. 2020** who found that older students had better QoL[16] and **Nur et al. 2017** who found no statistically significant difference between the older and younger groups[17].

That may be due to different society cultures.

We found that 353 (96.7%) of the students were single while only 12 (3.3%) students were married. There was no statistically significant difference in health dimension, personality dimension, external dimension and total QoL scores in single vs. married students in the four universities (p value = 0.165). That might be due to the very low number of married students in general in our sample size **(table 5).**

Out of the 365 students who completed the QoL survey, 325 students were IBS free while 40 students had IBS according to ROME IV criteria with a prevalence of 11% among university students **(table 1)**, that in agreement with **AlButaysh et al. 2020** who estimated IBS prevalence in the university students of the Kingdom of Saudi Arabia at 15.8%[18]. Nearly the same result was found in a Chinese study that reported a prevalence of 15.7% among Chinese university students[19].

Also in agreement with our study, a German study revealed that IBS prevalence among university students was 18.1%[20]. In the Lebanese study by **Costanian et al. 2015** IBS prevalence was estimated at 20%[21]. Close results were found in an Iranian study conducted at Ahvaz Jundishapur University of Medical Sciences[22] and an Egyptian study done at Suez Canal University[23] that found IBS prevalences among students were 21.1% and 22.9% respectively.

That in contrast to **Goyal et al. 2021**[24] and **Dong et al., 2010**[25] whose results were 6.2% and 7.85% respectively. That would be due to the difference in faculties included in the survey, varied study population and different diagnostic criteria applied (the latter study used Rome III criteria for IBS diagnosis).

Our study revealed that 28 students had IBS among medical students with a Prevalence of 13.86%, while only 12 students had IBS among non-medical students with a Prevalence of 7.36%. We found that prevalence of IBS among medical students was significantly higher than in non-medical students (p = 0.048) **(table 6).**

In agreement with the present study, **AlButaysh et al. 2020** stated that IBS was reported to be higher among medical students (31.9%) than among students of other colleges (8.8%)[18]. Another study conducted in Saudi Arabia showed significantly higher prevalence of IBS among medical students (42.2%) versus non-medical students (16.4%) in Jouf University[26].

In contrast with our study, **Jafri et al. 2005** found a higher frequency of IBS in non-medical college students in Pakistan (41% vs. 26%)[27], While an Egyptian study conducted in Suez Canal University reported that 23.8% of the students in the Faculty of Commerce English section had IBS, whereas 22.1% of the students in the Faculty of Medicine were diseased[23].

This might be because of IBS being not only highly affected by stress, but also by the unhealthy eating habits that non-medical students may not be aware of.

In our study, 29 female students reported to have IBS with a prevalence of 14.8%, whilst 11 male students reported to have IBS with a prevalence of 6.5%. This showed a significant higher prevalence of IBS in female students than in male students (p value = 0.011) **(table 6)**.

In concordance with the present study, **Ghanaei et al. 2009** found that IBS was more prevalent in females than males (15% vs. 8.1%)[28]. **AlButaysh et al. 2020** reported the same result with a percentage of 20.5% in females and 9.8% in males[18].

The Egyptian study by **Darweesh et al. 2015** demonstrated that IBS prevalence in female students was nearly 3 times the prevalence in males as 30.3% of the female students had IBS and only 9.8% of the male students had the disease[23].

In contrast, **Seger et al. 2020** found that male students were more affected by IBS with a prevalence of 16.9% versus 13.1% of female students that had the disease[29].

Likewise, **Wani et al. 2020** reported that IBS was more prevalent in the male students when compared to female students with a statistically significant relationship (P = 0.039) with a prevalence of 38.7% in males and 16% in females[26].

Those results indicating higher prevalence of IBS in males might be caused by increased expectations from family and society, family commitments, stressful education, and inability to handle the stress. Cultural factors might also limit females from reporting having the disease.

In our present study, we found a significant correlation between age and prevalence of IBS, as the median age of non-IBS students was 21 (18–26) while the median age of IBS students was 23 (19–25). IBS prevalence was significantly higher in older students than in younger ones (p value = < 0.001) **(table 6).**

This is in agreement with our study, **Govindaraja et al. 2018** found that IBS was more common in students who were or more than 22 years old[30], also **Alaqeel et al. 2017** reported the same results[31].

In contrast to our study, **Costanian et al. 2015**[21] and **Ghanaei et al. 2009**[28] documented that IBS prevalence was higher among students who aged ≤ 22 years than older students who aged > 22 years.

Those results might be due to improved adaptation of a lot of older students to the symptoms or due to becoming aware of managing the symptoms by medication.

We also found that 39 single students had IBS (97.5%) and only 1 married student had the disease (2.5%). The correlation between marital status and having IBS was statistically insignificant. That might be due to the very low number of married students in general in our sample size **(table 6).**

Our results showed that there was no statistically significant differences in IBS prevalence in the four universities (Mansoura, Alexandria, Port Said and Assuit) (p value = 0.121) **(table 6).**

In the present study, we investigated the QoL in the non-IBS and IBS students and found that IBS group had statistically significant lower QoL (p value = 0.039) **(table 6).**

In agreement with our results, **Dong et al. 2010**[25] and **Kesuma et al. 2021**[32].

# Limitation:

Refusal to fill out the questionnaires by some students or unfinishing it.

# Abbreviations:

QoL: quality of life and IBS: irritable bowel syndrome.

# Declarations:

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**Author Contributions:**

Conception and design: N.A. Ahmed (corresponding author).

Analysis interpretation of the data: N.A. Ahmed, H.S. El Wakil, R.H. Agwa and M.H. Ahmed.

Drafting of the article: N.A. Ahmed, H.S. El Wakil and M.H. Ahmed.

Critical revision for important intellectual content: N.A. Ahmed, H.S. El Wakil and M.H. Ahmed.

Final approval of the article: N.A. Ahmed, H.S. El Wakil and M.H. Ahmed.

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# Tables:

**Table (1): Baseline characteristics of the study group**

| Characteristic | Statistic |
|---|---|
| Categorial | **N = 365(%)** |
| Sex | |
| Male | 169 (46.3%) |
| Female | 196 (53.7%) |
| Marital status | |
| Single | 353 (96.7%) |
| Married | 12 (3.3%) |
| Faculty | |
| Medicine | 202 (55.3%) |
| Education | 163 (44.7%) |
| University | |
| Mansoura | 80 (21.9%) a |
| Alexandria | 83 (22.7%) a |
| Port Said | 120 (32.9%) a |
| Assuit | 82 (22.5%) a |
| IBS | 40 (11%) |
| QoL grade | |
| Low | 4 (1.1%) |
| Moderate | 48 (13.2%) |
| Good | 191 (52.3%) |
| High | 122 (33.4%) |
| Quantitative (Numeric) | |
| Age (years) | |
| N | 287 |
| Median (Q1-Q3) | 21 (19–23) |

**Table (2): QoL scores in Faculty of Medicine vs. Faculty of Education**

| Score | Medicine | Education | *Median difference (95% CI) | P value |
|---|---|---|---|---|
| Health | 28 (22–32) | 33 (28–38) | 6 (4–7) | **< 0.001** |
| Personality | 50 (41–60) | 62 (50–69) | 10 (8–12) | **< 0.001** |
| External standard | 48 (40–55) | 54.5 (44–62) | 6 (4–8) | **< 0.001** |
| Total | 127 (107–144) | 152 (127.3–168) | 24 (18–30) | **< 0.001** |
| Notes: Data is median (25th – 75th percentiles). *Median difference was calculated by Hodges-Lehmann estimator. CI = confidence interval. Test of significance is Mann-Whitney U-test. | | | | |

**Table (3): QoL in males vs. females who completed the survey**

| QoL | Male | Female | z-value | p-value |
|---|---|---|---|---|
| Health dimension | 33 (27–39) | 28 (23–33) | -5.531 | **< 0.001** |
| Personality dimension | 59 (48–69) | 53 (42–62) | -4.236 | **< 0.001** |
| External standard dimension | 52 (42–59) | 51 (42–58) | -1.188 | 0.235 |
| Total QoL score | 142 (122–165) | 134 (107–151) | -3.703 | **< 0.001** |
| Notes: Data is median (Q1-Q3). Test of significance is Mann-Whitney U-test. | | | | |

**Table (4): QoL in younger vs. older students who completed the survey**

| QoL | Younger | Older | z-value | p-value |
|---|---|---|---|---|
| Health dimension | 32.5 (27-38.8) | 28 (21–33) | -4.821 | **< 0.001** |
| Personality dimension | 61 (48–69) | 52 (40–61) | -4.491 | **< 0.001** |
| External standard dimension | 55 (45–62) | 50 (42–56) | -3.842 | **< 0.001** |
| Total QoL score | 147 (124–167) | 129 (107–148) | -4.724 | **< 0.001** |
| Notes: Age groups based on median age are younger (≤ 21 years) and older (> 21 years). Data is median (Q1-Q3). Test of significance is Mann-Whitney U-test. | | | | |

**Table (5): QoL in single vs. married who completed the survey**

| QoL | Single | Married | z-value | p-value |
|---|---|---|---|---|
| Health dimension | 30 (25–36) | 31.5 (25–35) | -0.219 | 0.827 |
| Personality dimension | 56 (46–69) | 47 (40.8–56.8) | -1.828 | 0.067 |
| External standard dimension | 52 (42.5–59) | 44 (37.5–55.8) | -1.632 | 0.103 |
| Total QoL score | 137 (114.5–159) | 122 (104-147.5) | -1.390 | 0.165 |
| Notes: Data is median (Q1-Q3). Test of significance is Mann-Whitney U-test. | | | | |

**Table (6): Comparisons of QoL and demographic data in IBS vs. non-IBS students who completed the survey (N=365)**

| Characteristic | Non-IBS<br>N = 325 | IBS<br>N = 40 | P value |
|---|---|---|---|
| Age (years) | | | **< 0.001** |
| N | 249 | 38 | |
| Median (Range) | 21 (18–26) | 23 (19–25) | |
| Sex | | | **0.011** |
| N | 325 | 40 | |
| Male | 158 (48.6%) | 11 (27.5%) | |
| Female | 167 (51.4%) | 29 (72.5%) | |
| Faculty | | | **0.048** |
| Medicine | 174 (53.5%) | 28 (70%) | |
| Education | 151 (46.5%) | 12 (30%) | |
| Marital status | | | |
| Single | 314 (96.6%) | 39 (97.5%) | 1.000 |
| Married | 11 (3.4%) | 1 (2.5%) | (FET) |
| University | | | 0.121 |
| Mansoura | 70 (21.5%) | 10 (25%) | |
| Alexandria | 72 (22.2%) | 11 (27.5%) | |
| Port Said | 104 (32%) | 16 (40%) | |
| Assuit | 79 (24.3%) | 3 (7.5%) | |
| QoL grade | | | **0.039** |
| N | 325 (56.7%) | 40 (48.2%) | |
| Low / Moderate | 42 (12.9%) | 10 (25%) | |
| Good / High | 283 (87.1%) | 30 (75%) | |
| QoL questionnaire scores | | | |
| Health dimension | 30.6 (8.1) | 24.4 (8.7) | **< 0.001** |
| Personality dimension | 55.2 (13.9) | 49.3 (16.1) | **0.014** |
| External standard dimension | 50.4 (12.2) | 47.6 (11.9) | 0.165 |
| Total score | 136.2 (31.5) | 121.3 (34.6) | **0.005** |

| Characteristic | Non-IBS | IBS | P value |
|---|---|---|---|
| | N = 325 | N = 40 | |

Notes: Data is N (%) for sex, marital status, faculty, university, and QoL grade (test of significance is Chi-Square test except marital status for which Fisher's exact test [FET] was used) median (Range) or for age [Test of significance is Mann-Whitney U-test] OR mean [$\bar{X}$] (SD) for QoL scores [Test of significance is Independent-Samples t-test].