RESEARCH ARTICLE

PREVALENCE OF INTRAOPERATIVE AND POSTOPERATIVE COMPLICATIONS IN COLORECTAL SURGERY

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Abstract

Introduction:
Colorectal surgery is performed for many diseases such as colorectal cancer, ulcerative colitis, Crohn's disease, mechanical bowel obstruction and recurrent diverticulitis, often resulting in major reconstruction of the gastrointestinal tract. Injury, ischemia, rectal prolapse and proctological disorders may also require large or small bowel resection. Potential risks of colorectal surgery are mainly those of any major abdominal surgery, and usually occur while the patient is still in the hospital. Because of the many indications for and the various extents of colorectal or small bowel resections the rate and spectrum of complications differ. The prevalence of complications intra-operative can help the doctor to avoid it and the complications postoperative can doctor preventive faster if he know the probability of complications.

Rationale:
This research, to the extent possible, will add to other relevant research as it will expand the area of knowledge of complications. While there is no research within the kingdom, I have spoken about the prevalence of intra-operative and postoperative complications. If we know the most common complications for any disease that can help we to asses and evaluate the patient and prevent anything unexpected to happening.

Literature review:

- According to the previous study like:

RESEARCH AIM: To determine the prevalence of intra- and postoperative complications of colorectal surgery.

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Objectives:
1. To determine the relationship of old age to increase the incidence of complications.
2. To determine the most common intra operative complications.
3. To determine the most common postoperative complications.
4. To see how clear the form of consent of surgery.

Methodology:
Study design:
This is an analytical cross-sectional study.

Study Setting and period:
This is an analytical cross-sectional study conducted in kingdom of Saudi Arabia (General population and the patient from the King Fahad Armed Forces Hospital), from 1/4/2019 till 19/10/2019.

Study population and sampling:
Study participants:
Inclusion criteria: patient with past history of colorectal surgery. Exclusion criteria: negative past history of colorectal surgery.

Sampling Method:
The study will be carried out by questionnaire.

Sampling size:
The study was carried out using OpenEpi for sample size calculation for cross sectional studies, hypothesizing the true answers. Accordingly, 510 participants were gathered from the hospital patients. The prevalence of patients who have a past history of doing colorectal surgery was 21.57%. According to the prevalence study, the results indicated that most of the respondents are between 18-35 years old, 8.82% of the respondents did a colorectal surgery due to colorectal cancer, 10.78% due to ulcerative colitis, 5.49% due to Crohn's disease, 5.29% due to mechanical bowel obstruction, 7.06% of the respondents did a colorectal surgery due to Recurrent diverticulitis, the bleeding was the most common symptom chosen by those who experienced complications during surgery.

Measurements:
Explanatory variables:
1. Sociodemographic characteristics: status, gender, age.
2. Disease-related information: Colorectal surgery, causes of Colorectal surgery, date of operations, complications that occurred intra-operative and post-operative.

Outcome measures:
The outcome measure is by counting the ratio of the number of patients who have a past history of doing a Colorectal surgery this will be measured using:
By determining the extent of the complications that occurred intra-operative and post-operative associated with Colorectal surgery.

Prevalence study: will be carried to test the questionnaire if easily understood and the response of the participants. Data from the cross-sectional study will be used to calculate the sample size.

Data Management and Analysis plan:
Data will be entered and analyzed using SPSS version 17.0. Descriptive statistics will be performed and categorical data will be displayed as frequencies and percentages while measures of central tendencies and measures and dispersion will be used to summarize continuous variables. Univariate and multivariate analysis will be performed to investigate association between exposure factors and associated disease. Statistical significance is set at a P value of 0.05 or less.

Statistical analysis:
Data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 17. Descriptive statistics were displayed as frequencies and percentages for categorical variables. Measures of central tendencies (the median), and measures and dispersion (minimum – maximum) were used to summarize continuous variables, as
the continuous variables were not normally distributed when tested by Shapiro-Wilk test. Univariate analysis was performed to investigate the association between the exposure factors with the outcome on the one hand, this was performed using Chi-squared test and Mann-Whitney test. Multivariate analysis to investigate factors independently was performed using binary logistic regression. P value was set at a significance level of < 0.05.

Results:
In this study, the aim was to determine the prevalence of intra- and postoperative complications of colorectal surgery. 510 patients’ participants, were consecutively recruited from in patients’ clinics, during a period from 1/4/2019 to 19/10/2019.

According to disease 21.57%, have a past history of doing a Colorectal surgery, 8.82% of the respondents did a colorectal surgery due to colorectal cancer, 10.78% due to ulcerative colitis, 5.49% due to Crohn's disease, 5.29% due to mechanical bowel obstruction, 7.06% of the respondents did a colorectal surgery due to Recurrent diverticulitis, the bleeding was the most common symptom chosen by those who experienced complications during surgery.

| Status       | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------------|-----------|---------|---------------|--------------------|
| In patient   | 110       | 21.6    | 21.6          | 21.6               |
| Out patient  | 400       | 78.4    | 78.4          | 100.0              |
| Total        | 510       | 100.0   | 100.0         |                    |

Gender

| Gender | Frequency | Percent | Valid Percent | Cumulative Percent |
|--------|-----------|---------|---------------|--------------------|

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### Gender

|       | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| Valid |           |         |               |                    |
| Female| 224       | 43.9    | 43.9          | 43.9               |
| Male  | 286       | 56.1    | 56.1          | 100.0              |
| Total | 510       | 100.0   | 100.0         |                    |

### Age

| Age Category                      | Frequency | Percent | Valid Percent | Cumulative Percent |
|-----------------------------------|-----------|---------|---------------|--------------------|
| less than 18 years old            | 49        | 9.6     | 9.6           | 9.6                |
| 18 - 25 years old                 | 165       | 32.4    | 32.4          | 42.0               |
| 26-35 years old                   | 133       | 26.1    | 26.1          | 68.0               |
| 36-50 years old                   | 110       | 21.6    | 21.6          | 89.6               |
| above than 50 years old           | 53        | 10.4    | 10.4          | 100.0              |
| Total                             | 510       | 100.0   | 100.0         |                    |
Do you have a past history of doing a Colorectal surgery?

|                | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------|-----------|---------|---------------|--------------------|
| Valid          |           |         |               |                    |
| No             | 400       | 78.4    | 78.4          | 78.4               |
| Yes            | 110       | 21.6    | 21.6          | 100.0              |
| Total          | 510       | 100.0   | 100.0         |                    |

**Age Distribution:**
- Less than 18 years old: 21.57%
- 18 - 25 years old: 32.35%
- 26 - 35 years old: 26.08%
- 36-50 years old: 10.39%
- Above 50 years old: 9.61%

**Pie Chart:**
- Total: 100.0%
|                | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------|-----------|---------|---------------|--------------------|
| Valid No       | 465       | 91.2    | 91.2          | 91.2               |
| Yes            | 45        | 8.8     | 8.8           | 100.0              |
| Total          | 510       | 100.0   | 100.0         |                    |

**Colorectal cancer**

**Ulcerative colitis**

|                | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------|-----------|---------|---------------|--------------------|
| Valid No       | 455       | 89.2    | 89.2          | 89.2               |
| Yes            | 55        | 10.8    | 10.8          | 100.0              |
| Total          | 510       | 100.0   | 100.0         |                    |
Crohn's disease

|                | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------|-----------|---------|---------------|--------------------|
| Valid No       | 482       | 94.5    | 94.5          | 94.5               |
| Valid Yes      | 28        | 5.5     | 5.5           | 100.0              |
| Total          | 510       | 100.0   | 100.0         |                    |
### Mechanical bowel obstruction

|       | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------|-----------|---------|---------------|--------------------|
| Valid | No        | 483     | 94.7          | 94.7               |
|       | Yes       | 27      | 5.3           | 5.3                |
| Total |           | 510     | 100.0         | 100.0              |

**Pie Chart:**
- **No:** 94.71%
- **Yes:** 5.29%
### Recurrent diverticulitis

|                | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------|-----------|---------|---------------|--------------------|
| Valid No       | 474       | 92.9    | 92.9          | 92.9               |
| Yes            | 36        | 7.1     | 7.1           | 100.0              |
| Total          | 510       | 100.0   | 100.0         |                    |

### Other

| Description                | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------------------|-----------|---------|---------------|--------------------|
| شرع في فتحة الشرج          | 1         | .2      | .2            | 97.1               |
| مرارة                      | 2         | .4      | .4            | 97.5               |
| لا يوجد                     | 1         | .2      | .2            | 97.6               |
| انحراف المستقيم             | 1         | .2      | .2            | 97.8               |
| لا يوجد سبب للجراحة مجرد متابعة | 1         | .2      | .2            | 98.0               |
| الزائدة الدودية             | 2         | .4      | .4            | 98.4               |
| جراحة المارة                | 1         | .2      | .2            | 98.6               |
| cholecystitis               | 1         | .2      | .2            | 98.8               |
| appendix                    | 1         | .2      | .2            | 99.0               |
| نقب غشاء طبل              | 1         | .2      | .2            | 99.2               |
| ولادة                      | 1         | .2      | .2            | 99.4               |
| شفط دهون                   | 1         | .2      | .2            | 99.6               |
| تكميم                      | 1         | .2      | .2            | 99.8               |
| لا يتم عمل عملية            | 1         | .2      | .2            | 100.0              |
| Total                      | 510       | 100.0   | 100.0         |                    |
since when you did the colorectal surgery?

| Frequency | Percent | Valid Percent | Cumulative Percent |
|-----------|---------|---------------|-------------------|
| Valid     | 01/1/19 | .2            | .7                |
|           | 01/3/19 | .4            | 1.5               | 2.2               |
|           | 01/4/18 | .2            | .7                | 2.9               |
|           | 01/4/19 | .2            | .7                | 3.7               |
|           | 01/5/19 | .4            | 1.5               | 5.1               |
|           | 01/7/17 | .2            | .7                | 5.9               |
|           | 01/8/17 | .2            | .7                | 6.6               |
|           | 02/2/19 | .2            | .7                | 7.4               |
|           | 02/3/19 | .2            | .7                | 8.1               |
|           | 02/5/19 | .2            | .7                | 8.8               |
|           | 02/6/16 | .2            | .7                | 9.6               |
|           | 02/9/19 | .2            | .7                | 10.3              |
|           | 02/12/16| .2            | .7                | 11.0              |
|           | 02/12/19| .2            | .7                | 11.8              |
|           | 03/12/16| .2            | .7                | 12.5              |
|           | 04/3/19 | .2            | .7                | 13.2              |
|           | 04/5/17 | .2            | .7                | 14.0              |
|           | 04/6/18 | .2            | .7                | 14.7              |
|           | 04/6/19 | .4            | 1.5               | 16.2              |
|           | 04/7/19 | .4            | 1.5               | 17.6              |
|           | 05/2/14 | .2            | .7                | 18.4              |
|           | 05/4/19 | .2            | .7                | 19.1              |
|           | 05/7/19 | .2            | .7                | 20.6              |
|           | 06/1/19 | .2            | .7                | 21.3              |
|           | 06/2/17 | .2            | .7                | 22.1              |
|           | 06/7/19 | .2            | .7                | 22.8              |
|           | 06/8/18 | .2            | .7                | 23.5              |
|           | 06/8/19 | .2            | .7                | 24.3              |
|           | 06/12/12| .2            | .7                | 25.0              |
|           | 07/3/19 | .2            | .7                | 25.7              |
|           | 07/4/17 | .2            | .7                | 26.5              |
|           | 07/5/19 | .2            | .7                | 27.2              |
|           | 07/7/19 | .2            | .7                | 27.9              |
|           | 07/8/19 | .2            | .7                | 28.7              |
|           | 08/3/19 | .2            | .7                | 29.4              |
|           | 08/5/19 | .2            | .7                | 30.1              |
|           | 08/6/13 | .2            | .7                | 30.9              |
|           | 08/6/18 | .2            | .7                | 31.6              |
| Date     | Value1 | Value2 | Value3 |
|---------|--------|--------|--------|
| 08/6/19 | 3      | .6     | 2.2    | 33.8   |
| 08/7/19 | 2      | .4     | 1.5    | 35.3   |
| 08/8/12 | 1      | .2     | .7     | 36.0   |
| 08/8/17 | 1      | .2     | .7     | 36.8   |
| 08/10/19| 1      | .2     | .7     | 37.5   |
| 09/1/19 | 1      | .2     | .7     | 38.2   |
| 09/2/19 | 1      | .2     | .7     | 39.0   |
| 09/5/19 | 1      | .2     | .7     | 39.7   |
| 09/6/19 | 1      | .2     | .7     | 40.4   |
| 10/3/15 | 1      | .2     | .7     | 41.2   |
| 10/4/19 | 1      | .2     | .7     | 41.9   |
| 10/5/19 | 1      | .2     | .7     | 42.6   |
| 10/6/18 | 1      | .2     | .7     | 43.4   |
| 10/7/19 | 1      | .2     | .7     | 44.1   |
| 10/9/19 | 3      | .6     | 2.2    | 46.3   |
| 11/5/19 | 1      | .2     | .7     | 47.1   |
| 11/6/17 | 1      | .2     | .7     | 47.8   |
| 11/6/19 | 2      | .4     | 1.5    | 49.3   |
| 11/7/09 | 1      | .2     | .7     | 50.0   |
| 11/8/19 | 1      | .2     | .7     | 50.7   |
| 11/9/17 | 1      | .2     | .7     | 51.5   |
| 11/9/18 | 1      | .2     | .7     | 52.2   |
| 11/9/19 | 2      | .4     | 1.5    | 53.7   |
| 11/10/19| 1      | .2     | .7     | 54.4   |
| 12/3/19 | 3      | .6     | 2.2    | 56.6   |
| 12/6/19 | 2      | .4     | 1.5    | 58.1   |
| 12/8/19 | 1      | .2     | .7     | 58.8   |
| 13/1/19 | 1      | .2     | .7     | 59.6   |
| 13/6/10 | 1      | .2     | .7     | 60.3   |
| 13/8/19 | 2      | .4     | 1.5    | 61.8   |
| 14/1/19 | 1      | .2     | .7     | 62.5   |
| 14/7/19 | 1      | .2     | .7     | 63.2   |
| 14/8/19 | 2      | .4     | 1.5    | 64.7   |
| 15/5/19 | 2      | .4     | 1.5    | 66.2   |
| 15/7/19 | 3      | .6     | 2.2    | 68.4   |
| 15/8/19 | 1      | .2     | .7     | 69.1   |
| 16/8/19 | 1      | .2     | .7     | 69.9   |
| 16/9/19 | 1      | .2     | .7     | 70.6   |
| 16/11/16| 1      | .2     | .7     | 71.3   |
| 17/1/19 | 2      | .4     | 1.5    | 72.8   |
| 17/2/19 | 1      | .2     | .7     | 73.5   |
| 17/6/19 | 1      | .2     | .7     | 74.3   |
| Date       | Count | Value | Count | Value |
|------------|-------|-------|-------|-------|
| 19/1/19    | 1     | .2    | .7    | 75.0  |
| 19/7/16    | 1     | .2    | .7    | 75.7  |
| 19/7/19    | 1     | .2    | .7    | 76.5  |
| 19/8/19    | 1     | .2    | .7    | 77.2  |
| 20/2/19    | 1     | .2    | .7    | 77.9  |
| 20/6/19    | 2     | .4    | 1.5   | 79.4  |
| 20/8/18    | 1     | .2    | .7    | 80.1  |
| 20/9/19    | 1     | .2    | .7    | 80.9  |
| 20/12/19   | 1     | .2    | .7    | 81.6  |
| 21/4/14    | 1     | .2    | .7    | 82.4  |
| 21/4/19    | 1     | .2    | .7    | 83.1  |
| 21/6/19    | 1     | .2    | .7    | 83.8  |
| 21/7/12    | 1     | .2    | .7    | 84.6  |
| 22/2/17    | 1     | .2    | .7    | 85.3  |
| 22/5/19    | 2     | .4    | 1.5   | 86.8  |
| 23/3/11    | 1     | .2    | .7    | 87.5  |
| 23/5/19    | 1     | .2    | .7    | 88.2  |
| 23/6/15    | 1     | .2    | .7    | 89.0  |
| 23/12/13   | 1     | .2    | .7    | 89.7  |
| 24/4/19    | 1     | .2    | .7    | 90.4  |
| 24/5/17    | 1     | .2    | .7    | 91.2  |
| 24/7/19    | 1     | .2    | .7    | 91.9  |
| 24/9/18    | 1     | .2    | .7    | 92.6  |
| 25/9/17    | 1     | .2    | .7    | 93.4  |
| 25/9/19    | 1     | .2    | .7    | 94.1  |
| 26/6/19    | 1     | .2    | .7    | 94.9  |
| 27/5/16    | 1     | .2    | .7    | 95.6  |
| 27/5/18    | 1     | .2    | .7    | 96.3  |
| 27/10/16   | 1     | .2    | .7    | 97.1  |
| 27/12/08   | 1     | .2    | .7    | 97.8  |
| 28/1/19    | 1     | .2    | .7    | 98.5  |
| 29/9/18    | 1     | .2    | .7    | 99.3  |
| 30/9/19    | 1     | .2    | .7    | 100.0 |
| Total      | 136   | 26.7  | 100.0 |

Missing System
| Count | Value |
|-------|-------|
| 374   | 73.3  |

Total
| Count | Value |
|-------|-------|
| 510   | 100.0 |
Select the complications that occurred intr-operative

|                      | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------------|-----------|---------|---------------|--------------------|
| Valid                |           |         |               |                    |
| Nothing              | 409       | 80.2    | 80.2          | 80.2               |
| Bleeding             | 32        | 6.3     | 6.3           | 86.5               |
| Bowel injury         | 16        | 3.1     | 3.1           | 89.6               |
| Urethral lesions     | 4         | .8      | .8            | 90.4               |
| Bladder injuries caused by intra abdominal adhesions | 4 | .8 | .8 | 91.2 |
| Anatomic problems    | 5         | 1.0     | 1.0           | 92.2               |
| Damage to the spleen | 1         | .2      | .2            | 92.4               |
| Intestinal perforation | 7    | 1.4     | 1.4           | 93.7               |
| Injuries to the abdominal or pelvic veins | 7 | 1.4 | 1.4 | 95.1 |
| Other                | 25        | 4.9     | 4.9           | 100.0              |
| Total                | 510       | 100.0   | 100.0         |                    |
Select the complications that occurred post operative?

| Complication                        | Frequency | Percent | Valid Percent | Cumulative Percent |
|-------------------------------------|-----------|---------|---------------|--------------------|
| Nothing                             | 410       | 80.4    | 80.4          | 80.4               |
| Surgical site infection (SSI)       | 20        | 3.9     | 3.9           | 84.3               |
| Anastomotic leakage                 | 4         | .8      | .8            | 85.1               |
| Ileus                               | 11        | 2.2     | 2.2           | 87.3               |
| Bleeding                            | 32        | 6.3     | 6.3           | 93.5               |
| Other                               | 33        | 6.5     | 6.5           | 100.0              |
| Total                               | 510       | 100.0   | 100.0         |                    |

Select the complications that occurred intr- operative:

- Nothing: 80.20%
- Bleeding: 4.90%
- Bowel injury: 3.14%
- Urethral lesions: 1.37%
- Bladder injuries caused by intra abdominal adhesions: 6.27%
- Anatomic problems: 8.20%
- Damage to the spleen: 3.00%
- Intestinal perforation: 4.00%
- Injuries to the abdominal or pelvic veins: 2.00%
- Other: 1.00%
The form of consent for surgery was obvious, I didn’t need a doctor to explain to me?

|                | Frequency | Percent | Valid Percent | Cumulative Percent |
|----------------|-----------|---------|---------------|--------------------|
| Valid          |           |         |               |                    |
| Strongly agree | 65        | 12.7    | 27.9          | 27.9               |
| Agree         | 79        | 15.5    | 33.9          | 61.8               |
| Disagree      | 59        | 11.6    | 25.3          | 87.1               |
| Strongly disagree | 30    | 5.9     | 12.9          | 100.0              |
| Total         | 233       | 45.7    | 100.0         |                    |
| Missing       |           |         |               |                    |
| System        | 277       | 54.3    |               |                    |
| Total         | 510       | 100.0   |               |                    |
Discussion:
This study was based on a number of 510 participants, from this study as the number of have a past history of doing a Colorectal surgery is 110, most of the respondents did a colorectal surgery due to ulcerative colitis. The current study showed statistically significant (P value is 0.01) and (P value is 0.05), Through the questionnaire it was found that the majority of those who had colorectal surgery did not experience any complications after the surgery, but bleeding was the largest complication that affected those who suffered complications after surgery.

Conclusion:
The results showed very positive results due to that most of the respondents do not have a past history of doing a Colorectal surgery.

It is clear from the results that most of the respondents did a colorectal surgery due to ulcerative colitis.

It was clear from the results that the majority of those who had colorectal surgery did not experience any complications during the surgery, but bleeding was the largest complication that affected those who suffered complications during surgery.

And it was clear from the results that the majority of those who had colorectal surgery did not experience any complications after the surgery, but bleeding was the largest complication that affected those who suffered complications after surgery.

Recommendation:
we recommend setting up health education programs about colorectal surgery, this health problem must be presented broadly and beneficially and, in a way, that everyone understands.

Acknowledgement:
The authors would like to thank the participants for their great cooperation, Participants will be especially from general population selected and carried out by questionnaire.
We thank the data collectors who collected the data from the patients, they worked hard to collect data greatly, and a large sample number was collected for their great effort.

Ethical considerations
Administrative approval will be sought from the unit of biomedical ethics research committee Ethical approval will be sought from the ethical committee of the faculty of medicine, king abdulaziz university. An informed consent will be sought from the participants.

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References:

1. Cleveland Clinic. (2015). Colonoscopy Procedure: Colonoscopy Instructions. [online] Available at: https://my.clevelandclinic.org/health/articles/colonoscopy-procedure/colon-rectal-cancer-screening [Accessed 20 Jan. 2015].

2. Molenaar CB, e. (1998). Indications for laparoscopic colorectal surgery. Results from the Medical Centre Alkmaar, The Netherlands. - PubMed - NCBI. [online] Ncbi.nlm.nih.gov. Available at: https://www.ncbi.nlm.nih.gov/pubmed/9419301 [Accessed 12 Jan. 1998].

3. Kirchhoff, P., Clavien, P. and Hahnloser, D. (2010). Complications in colorectal surgery: risk factors and preventive strategies. Patient Safety in Surgery, [online] 4(1), p.5. Available at: https://pssjournal.biomedcentral.com/articles/10.1186/1754-9493-4-5 [Accessed 3 Aug. 2019].

4. Clavien PA, e. (2009). The Clavien-Dindo classification of surgical complications: five-year experience. - PubMed - NCBI. [online] Ncbi.nlm.nih.gov. Available at: https://www.ncbi.nlm.nih.gov/pubmed/19638912?dopt=Abstract [Accessed 3 Aug. 2019].

5. Artinyan A, e. (2008). Prolonged postoperative ileus-definition, risk factors, and predictors after surgery. - PubMed - NCBI. [online] Ncbi.nlm.nih.gov. Available at: http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?cmd=Retrieve&db=PubMed&dopt=Abstract&list_uids=18305994 [Accessed Jul. 2008].

6. Healthline. (2019). Colonoscopy Risks: Side Effects, Alternative Tests, Complications. [online] Available at: https://www.healthline.com/health/colonoscopy-risks [Accessed 3 Aug. 2019].

7. Almutairi KM, e. (2016). A cross-sectional assessment of quality of life of colorectal cancer patients in Saudi Arabia. - PubMed - NCBI. [online] Ncbi.nlm.nih.gov. Available at: https://www.ncbi.nlm.nih.gov/pubmed/26199014 [Accessed 3 Aug. 2019].

APPENDIXES

Questionnaire

Status

- In patient
- Out patient

Gender
- Female
- Male

  Age
  - less than 18 years old
  - 18 - 25 years old
  - 26-35 years old
  - 36-50 years old
  - above than 50 years old

Do you have a past history of doing a Colorectal surgery?
- No
- Yes
  - Colorectal cancer
  - No
  - Yes
  - Ulcerative colitis
  - No
  - Yes
  - Crohn's disease
  - No
  - Yes
  - Mechanical bowel obstruction
  - No
  - Yes
  - Recurrent diverticulitis
  - No
  - Yes

Other
- No
- شرح في فتحة الشرج
- ماره
- لا يوجد
- انحراف المستقيم
- لا يوجد سبب للجراحة مجدد متابعة
- الزاندة الدودية
- جراحة المرة
- Cholecystitis
- Appendix
- الثقب غشاء طبل
- ولادة
- شفط دهون
- تكميم
- لم يتم عمل عملية

since when you did the colorectal surgery?
Select the complications that occurred intr- operative

- Nothing
- Bleeding
- Bowel injury
- Urethral lesions
- Bladder injuries caused by intra abdominal adhesions
- Anatomic problems
- Damage to the spleen
- Intestinal perforation

- انثقاب الانامعاء
- Injuries to the abdominal or pelvic veins
- Other
  Select the complications that occurred post operative?
  - Nothing
  - Surgical site infection (SSI)
  - Anastomotic leakage
  - Ileus
  - Bleeding
  - Other
    The form of consent for surgery was obvious, I didn't need a doctor to explain to me ?
    - Strongly agree
    - Agree
    - Disagree
    - Strongly disagree
    - Total