



Knowledge, attitude and practice of small bowel obstruction among Saudi population

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General Note



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ABSTRACT

Background: Small bowel obstruction (SBO) is defined as a complete or partial mechanical blockage to the passage of intraluminal contents. In the United States, 15% of admissions for abdominal pain are secondary to SBO, with 300,000 hospital admissions annually. The most common causes of SBO by order are adhesions followed by hernias, Crohn's disease, malignancy, and volvulus.

Materials and Methods: The target population for this survey study was Saudi nationals aged 18 years and older. **Main Outcome Measures:** The population's knowledge level and response towards SBO. **Results:** Among those surveyed, 51.9% said that their source of information on the treatment of small bowel obstruction was from websites on the internet. Almost all participants (95.3%) agreed that it is necessary to go to the emergency department if the symptoms last for three days. Also, 61.6% strongly agreed that it is essential to visit a health care center for SBO. A large portion (62.8%) strongly agreed to visit the doctor immediately after having SBO symptoms. **Conclusions:** A positively significant relationship was found between the participants' mean attitude (A) and practice (P) scores.

Keywords: small bowel obstruction; adhesion; knowledge; attitude; practice.

1. INTRODUCTION

Small bowel obstruction (SBO) is defined as a complete or partial mechanical blockage to the passage of intraluminal contents (Blackbourne, 2017; Al Salamah et al., 2012). It is the most common surgical disorder of the small intestine (Al Salamah et al, 2012). The most common causes of SBO by order are adhesions followed by hernias, Crohn's disease, malignancy, and volvulus (Cox et al, 1993). In the United States, 15% of admissions for abdominal pain are secondary to SBO, with 300,000 hospital admissions annually (Taylor & Lalani, 2013). Around 60–70% of SBO cases occur due to abdominal adhesions that can start to form within a few hours after an operation (Catena, 2010). Of all surgical admissions for acute abdominal pain, 20% are due to adhesive small bowel obstruction (ASBO), (Al Salamah et al, 2012). Moreover, ASBO accounts for around 20% of all surgical admissions to the hospital (Al Salamah et al, 2012). Studies have shown that 50.93% of patients who have undergone abdominopelvic surgery will eventually develop adhesions and 35% will be hospitalized for bowel obstruction within 10 years of their first surgery (Rice et al, 2014).

The symptoms of SBO include abdominal pain, cramps, nausea, vomiting, abdominal distention, constipation, and absence of flatus (Rice et al, 2014; Abdelrahman & Younes, 2020). Al Salamah et al. (2012) reported that 174 out of 195 patients who were initially admitted with suspected SBO later had it confirmed. Approximately half of the patients sought medical attention within three days of symptom onset, while 12.6% waited more than a week before seeking medical attention. The most common presenting symptoms were abdominal pain, vomiting, constipation, and obstipation, with an occurrence rate of 82.8%, 67.2%, 63.8%, 39%, respectively. The diagnosis of SBO is made based on clinical features and radiological tests (Rice et al, 2014). A 35-year institutional experience revealed that 42% of SBO cases were caused by strangulation short bowel obstruction (SSBO) (Huang et al, 2018).

Another study showed that 66.4% of patients diagnosed with SBO were male and 50.4% were above 60 years old (Huang et al, 2018). Of these patients, 18.1% were confirmed to have SBO, and 40.8% required operative management. Furthermore, 67.6% complained of vomiting. The average time from patient admission to operative management was 57.41 hours. This study also revealed that adhesive disease is the most common etiology of non-strangulating SBO (Huang et al, 2018). A questionnaire was developed by researchers from the United States to measure quality of life in SBO patients (Rice et al, 2014). This study included 158 participants, 148 of whom were from the normal population, 10 of whom had a history of SBO. The sample surveyed had an equal distribution of gender and an age range of 18–65 years old. The study revealed that 89.3% of the normal population did not benefit from adopting a fiber-rich diet, while 90% of the participants who previously had SBO noted relief from symptoms of constipation by following a fiber-rich diet. All articles agree that patients younger than 60 years of age are more prone to develop SBO (Rice et al, 2014). It is important to note that many of these studies had small sample sizes, which limits the applicability of their results and conclusions.

To the best of our knowledge, no articles were previously published on the knowledge, attitude, and practice related to SBO among the Saudi population. To remedy this gap in the literature, we developed a questionnaire following the KAP model to help us better understand SBO in the Saudi population.

2. MATERIALS & METHODS

A cross-sectional study was used to survey the general Saudi population. The inclusion criteria were Saudi nationals aged 18 years and older. Convenience sampling was used to gather responses from academic institutions and public facilities like malls and parks around Riyadh, Saudi Arabia. The academic institutions visited were Princess NourahBint Abdul Rahman University, Imam Muhammed bin Saudi Islamic University, and several governmental hospitals. The prevalence of good knowledge amongst participants was assumed to be around 10%, with a 3% margin of error. A sample size of 2796 was determined using a sample size

calculator (G power 3.1.9.2) based on a power of 80% and a confidence level of 95%. IRP reference number (12-2020) from Al-Imam Muhammad Ibn Saud Islamic University Institutional Review Board.

Statistical analysis

The data was gathered via a questionnaire. Descriptive analysis was calculated using frequencies and means while inferential statistics were formed by utilizing the Chi-square, Mann-Whitney U, and Kruskal-Wallis tests. Binary regression was used to present the results. For each test, level of significance was set at 0.05. All statistical analyses were performed using the Statistical Package for Social Sciences software, version 23 (SPSS Inc., Chicago, IL).

3. RESULTS

A total of 5948 participants filled the questionnaire. Demographic data including gender, age, education level, and accommodation status are shown in Table 1. The survey respondents were predominantly from the 18-24 age group.

Table 1: Demographic profile of study participants

Variable	N (%)
Age	
18-24	3123 (52.2%)
25-29	1563 (26.3%)
30-34	577 (9.7%)
35-39	278 (4.7%)
40 and above	407 (6.8%)
Gender	
Male	1194 (20.1%)
Female	4754 (79.9%)
Education	
Did not complete high school	307 (5.2%)
High School Graduate	1257 (21.2%)
College	4182 (70.3%)
Master	156 (2.6%)
PhD	46 (0.8%)
Accommodation	
Rented house	735 (12.4%)
Own house	3950 (66.4%)
Rented apartment	886 (14.9%)
Own apartment	377 (6.3%)
Knows about Small Bowel Obstruction	
Yes	1067 (17.9%)
No	4881 (82.1%)

Descriptive statistics for each item in the questionnaire are shown in Table 2. In the knowledge section, n=3087 (51.9%) said that their source of information about the treatment of SBO was from websites on the internet. Additionally, n=4249 (71.4%) agreed that SBO may be caused by a hernia. A majority of respondents (86%) answered that SBO may require surgical intervention. Additionally, 58.5% agreed that irritable bowel syndrome presents with symptoms similar to SBO. Almost all participants (95.3%) agreed that it is necessary to go to the emergency department if abdominal pain and constipation symptoms last for three days. When participants were asked about the presenting symptoms of SBO, they responded as follows: Figure 1 demonstrates the participants' identification of short bowel obstruction symptoms. 83.5% of identified crampy abdominal pain as a symptom of SOB, 87% identified constipation, 60.2% identified vomiting, 70.4% identified inability to have a bowel movement or gases, 75.8% identified loss of appetite and 89.6% identified swelling of the abdomen (distension).

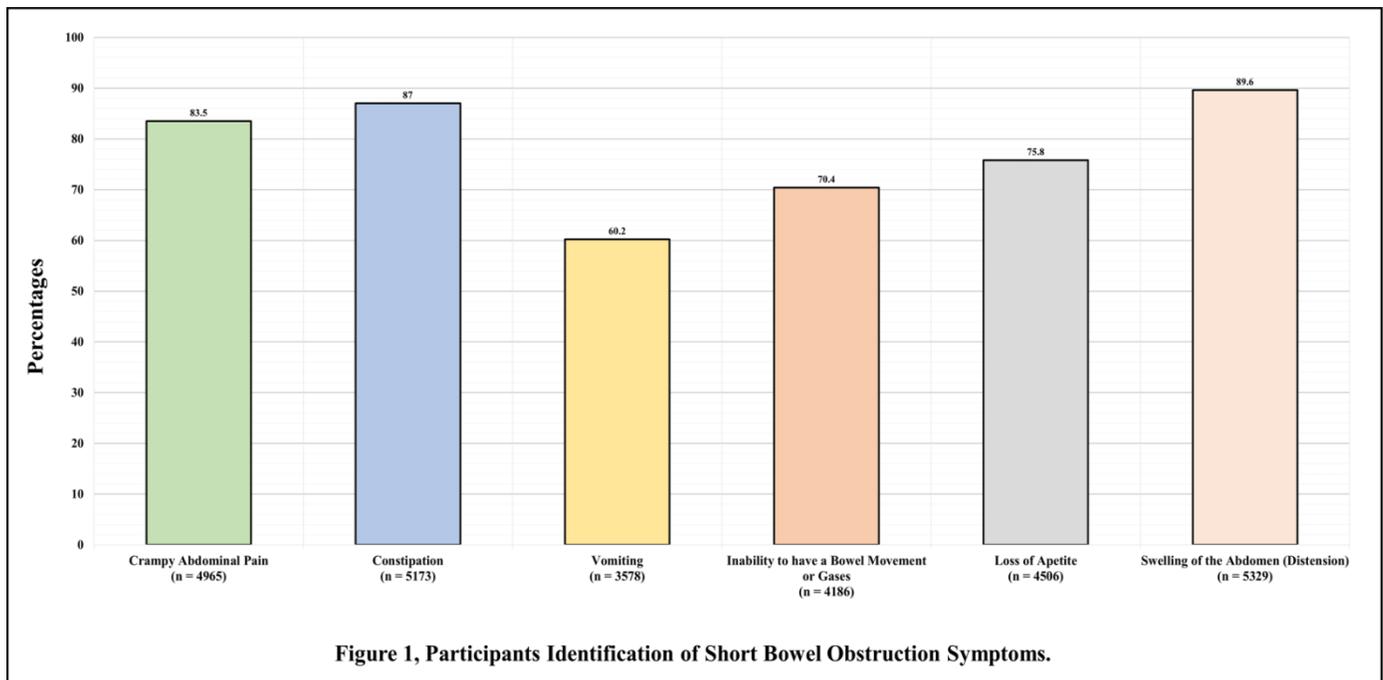


Figure 1, Participants Identification of Short Bowel Obstruction Symptoms.

Almost half of the participants (51.7%) agreed that patients who underwent surgical interventions in the past are more likely to have SBO. More than half (54.5%) thought that stress and anxiety may cause SBO. Many respondents (63.6%) thought that SBO does not lead to gangrene. Furthermore, 70.9% agreed that malignant or benign tumors can cause SBO. The vast majority (91.9%) thought that drinking enough water can help prevent occurrence of SBO, and 40.3% thought that low fiber intake helps in preventing SBO.

Negative attitude was observed in questions related to the diagnosis of SBO i.e. question A3 (Alternative healers usually provide better and faster treatment than the health care center) and A4 (I follow advice from friends and family about bowel obstruction treatment). Only 43.7% of participants strongly agreed that SBO is a serious illness. Also, 61.6% strongly agreed that it is essential to visit a health care center for the management of SBO.

The participants' responses to practice questions showed that most of them (57.6%) will first opt to change their diet if they experience SBO symptoms. A significant number of participants (46.1%) strongly disagreed with taking medications without a doctor's advice. A large portion (62.8%) strongly agreed to visit the doctor immediately after having SBO symptoms.

Table 2: Frequency of question responses

Domain	no.	Yes	No
Knowledge	K1	3087 (51.9%)	2861 (48.1%)
	K2	4249 (71.4%)	1699 (28.6%)
	K3	5113 (86%)	835 (14%)
	K4	3480 (58.5%)	2468 (41.5%)
	K5	5671 (95.3%)	277 (4.7%)
symptoms	K6a	4965 (83.5%)	983 (16.5%)
	K6b	5173 (87%)	775 (13%)
	K6c	3578 (60.2%)	2370 (39.8%)
	K6d	4186 (70.4%)	1762 (29.6%)
	K6e	4506 (75.8%)	1442 (24.2%)
	K6f	5329 (89.6%)	619 (10.4%)
causes	K7a	3078 (51.7%)	2870 (48.3%)
	K7b	3240 (54.5%)	2708 (45.5%)
	K7c	2166 (36.4%)	3782 (63.6%)
	K7d	4216 (70.9%)	1732 (29.1%)

K7e	2396 (40.3%)	3552 (59.7%)
K7f	5468 (91.9%)	480 (8.1%)

Attitude	strongly agree	agree	natural	disagree	strongly disagree
A1	2597 (43.7%)	2278 (38.3%)	961 (16.2%)	91 (1.5%)	21 (0.4%)
A2	132 (2.2%)	148 (2.5%)	281 (4.7%)	1721 (28.9%)	3666 (61.6%)
A3	191 (3.2%)	665 (11.2%)	2161 (36.3%)	1410 (23.7%)	1521 (25.6%)
A4	239 (4.0%)	814 (13.7%)	1761 (29.6%)	1592 (26.8%)	1542 (25.9%)
Practice	strongly agree	agree	natural	disagree	strongly disagree
P1	3429 (57.6%)	2092 (35.2%)	325 (5.5%)	73 (1.2%)	29 (0.5%)
P2	228 (3.8%)	328 (5.5%)	645 (10.8%)	2006 (33.7%)	2741 (46.1%)
P3	3737 (62.8%)	1677 (28.2%)	383 (6.4%)	102 (1.7%)	49 (0.8%)

The survey respondents' mean scores in the knowledge (K), attitude (A), and practice (P) subcategories were compared to their demographic information as shown in Table 3. Males scored significantly higher on both knowledge (K) scores ($z = -6.332, P < .001$) and attitude (A) scores ($Z = -6.717, P < .001$), but no significant difference was found in practice (P) scores between the two genders ($Z = -1.76, P = .78$). Participants with pre-existing knowledge about SBO scored higher on all three scales (KAP), with the difference being statistically significant for K scores ($Z = -7.212, P < .001$), and A scores ($Z = -7.691, P < .001$). No significant relationship was found when it came to group differences in P scores ($Z = -0.689, P = .491$). Regarding age groups, the Kruskal-Wallis test was found to be statistically significant for K scores ($\chi^2(4) = 45.393, P < .001$) and P scores ($\chi^2(4) = 63.753, P < .001$). However, the test failed to show any statistical significance for A scores ($\chi^2(4) = 0.279, P = .991$). With regards to different levels of education, the KruskalWallis test revealed statistically significant differences among the groups for K scores ($\chi^2(4) = 14.825, P < .01$) and P scores ($\chi^2(4) = 10.961, P < .05$), but a statistically insignificant difference for A scores ($\chi^2(4) = 3.368, P = .498$).

Table 3: Mean knowledge (K), attitude (A), and practice (P) score concerning demographics

Variable	K. score 1.30+0.13 Mean rank	P-value	A. score 2.65+0.58 Mean rank	P-value	P. score 3.62+0.44 Mean rank	P-value
*Gender						
Male	3252.99	0.00	3270.21	0.00	2900.18	0.078
Female	2904.56		2900.23		2993.17	
**age						
18-23	3075.15		2980.33		2830.53	
24-29	2974.10	0.00	2956.96	0.99	3040.45	0.00
30-34	2868.25		2969.98		3199.87	
35-39	2599.86		2988.79		3327.47	
40 and above	2610.24		2993.78		3265.33	
**Education						
Did not complete high school	3104.42		3020.34		2775.88	
High School Graduate	3088.57	0.005	3044.21	0.498	2927.98	0.027
College	2944.91		2952.86		2991.93	
Master	2667.84		2944.03		3146.09	
PhD	2720.29		2834.89		3404.77	
**Accommodation						
Rented house	2944.58		3085.29		3018.77	
Own house	2978.15	0.648	2965.19	0.193	2963.60	0.753
Rented apartment	3017.26		2969.49		3002.96	
Own apartment	2894.09		2867.80		2935.56	

*knows about bowel
obstruction

YES	2634.50	0.000	2611.57	0.000	3005.69	0.491
NO	3048.82		3053.84		2967.68	

P-value < 0.05 is statistically significant; **Kruskal Wallis H test; *Mann-Whitney U Note: K-score = average knowledge score; A-score = average attitude score; P-score = Average practice score

A nonparametric Kruskal Wallis H-Test revealed significant P-values shown in Table 3.1 and Table 3.2 concerning the education and age demographic variables. Regarding accommodation status, none of the KAP subcategories showed statistically significant results with the Kruskal-Wallis test.

Table 3.1: Nonparametric Kruskal-Wallis H-Test for education

Educations	Knowledge P-value	Practice P-value
Master-PhD	1,00	1,00
Master- college	0,456	0,25
Master- High school graduate	0,035*	0,21
Master- did not complete high school	0,090	0,15
PhD-college	1,00	1,00
Ph.D. – high school graduate	1,00	1,00
PhD-did not complete high school	1,00	0,52
College-high school graduate	0,086	1,00
College-did not complete high school	1,00	0,88
High school graduate-did not complete high school	1,00	1,00

*statistically significant at $p < 0.05$

Table 3.2: nonparametric Kruskal Wallis H for Ages

Age	Knowledge P-value	Practice P-value
35-39 – 40 and above	1.000	1.000
35-39 – 30-24	0.306	1.000
35-39 – 24-29	0.007*	0,069
35-39 – 18-23	0.000*	0,000*
40 and above – 30-24	0.190	1.000
40 and above – 24-29	0.001*	0.133
40 and above – 18-23	0.000*	0,000*
30-24 – 24-29	1.000	0,450
30-24 – 18-23	0.072	0,000*
24-29 – 18-23	0.550	0,000*

*statistically significant at $p < 0.05$

A weak positive relationship was found between P and A scores ($r=0.083$, $P<.001$). Conversely, a weak but statistically significant negative relationship was found between P and K scores ($r=0.123$, $P<.001$). Lastly, no significant relationship was found between K and A scores ($r=-0.011$, $P=.412$) as shown in Table 4.

Table 4: Spearman's rank order correlation between KAP

Variables	rho	P-value
Knowledge, attitude	-0.011	0.412
Knowledge, practice	-0.123	<0.001*
Practice, Attitude	0.083	<0.001*

* Statistically significant at $p < 0.05$

4. DISCUSSION

In this study 5948 individuals completed the questionnaire. The majority of participants were female, and the most common age group was 18-24 years old. Most of the survey respondents had a college degree. Participants with preexisting knowledge about small bowel obstruction had the highest scores across all three subcategories of knowledge (K), attitude (A), practice (P) with a significant difference appearing in their (K), and (P) subcategory scores.

This KAP survey on the subject of SBO has an important role in raising awareness of factors that may help prevent SBO such as increased fiber intake, and early intervention. Early management will potentially reduce the risk of fatal complications of SBO such as perforation, intestinal ischemia, small bowel necrosis, and sepsis. It is important to raise awareness of the clinical presentation and cardinal symptoms of SBO to encourage patients to seek medical attention as early as possible.

In the aforementioned study by Al Salamah et al, approximately half of the patients sought medical attention within three days of the onset of symptoms while 12.6% waited for more than a week before seeking medical attention. The most common presenting symptoms in this study were abdominal pain, vomiting, constipation, obstipation, with an occurrence rate of 82.8%, 67.2%, 63.8%, 39%, respectively (Al Salamah et al, 2012).

Our study revealed that 51.7% of study participants agree that past abdominal surgery is a risk factor for developing SBO, and more than half of the participants (63.6%) think that SBO does not lead to gangrene. This may indicate that the survey respondents are not aware of complications of SBO and are less likely to think of it as a serious illness. Additionally, 40.3% thought that low fiber intake helps to prevent SBO. This reflects lack of knowledge about SBO among the participants.

In a 2006 study, the most common cause of SBO is adhesions, followed by obstructed hernias, volvulus, intussusception, carcinoma, and others (Chang et al, 2006). Additionally, another study done in 2018 showed that volvulus is the primary cause in patients with strangulated short bowel obstruction (SSBO), while adhesive short bowel obstruction (ASBO) is considered the leading cause in patients with non-strangulated SBO (Huang, 2018). A similar study from 2011 revealed that the most important risk factor for ASBO is previous abdominal surgery and the extent of peritoneal damage (Catena, 2011). Colorectal surgeries were found to be associated with a high risk of adhesion-related problems (Catena, 2011).

Our results indicate that high P scores are associated with high A scores and vice-versa, regardless of the high significance – which is expected considering the large sample size – considering the magnitude of the effect the relationship is close to negligible.

As shown in Table 3.1, there is a significant difference in knowledge between master's degree holders and those with a high school degree. High school graduates have a higher mean score the master's degree holders, this may be because people who attain a master's degree are more focused on their specialty and have less time to read about other things. In the P subcategory, we found the overall effect to significant, but the corrected pairwise comparisons were not.

A significant difference emerges between different age groups in the K and P subcategories as seen in Table 3.2. We noticed that the younger age groups had a higher mean score than older age groups. The two groups (18-23 and 24-29) may have shown a greater level of knowledge in the K subcategory because their use of technology and high exposure to information sources like the internet and the news. The level of knowledge in the P subcategory was only significant for the 18-23 age group. They may have scored the lowest because their young age suggests carefree behavior.

The limitation of our study was difficult to compare our results with results in other articles due to the lack of similar research studies in the literature.

5. CONCLUSIONS

The aim of this study was to contribute to improving patient outcomes and preventing SBO complications. We encourage holding educational sessions, lectures, campaigns, and creating audio-visual aids about SBO prevention. Holding such events will raise awareness and influence a positive change in the knowledge, attitude, and practice towards SBO among the general population.

Further well-designed, representative, studies about the knowledge, attitude, and practice toward small bowel obstruction are needed.

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study.

Ethical Approval

The study was approved by the Medical Ethics Committee of Al-Imam Muhammad Ibn Saud Islamic University (Code: 12-2020).

Author Contributions

Conceptualization, Nahlah S. Arab, Mansour I Alshehri, Farah A Alshammari, Ghadeer A Althaqiband Asma A Alshammari.; methodology, Nahlah S. Arab, Mansour I Alshehri, Farah A Alshammari, Ghadeer A Althaqiband Asma A Alshammari.; validation Nahlah S. Arab, Mansour I Alshehri, Farah A Alshammari and Ghadeer A Althaqib.; formal analysis, Mansour I Alshehri.; data curation, Mansour I Alshehri, Farah A Alshammari, Ghadeer A Althaqiband Asma A Alshammari.; writing—original draft preparation, Mansour I Alshehri, Farah A Alshammari and Ghadeer A Althaqib.; writing—review and editing, Mansour I Alshehri, Farah A Alshammari and Ghadeer A Althaqib.; supervision, Nahlah S. Arab.; project administration, Nahlah S. Arab. All authors have read and agreed to the published version of the manuscript.

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Conflicts of Interest

The authors state that there is no conflict of interest and no funding was received for this work.

Data and materials availability

All data associated with this study are present in the paper and available upon requested.

Peer-review

External peer-review was done through double-blind method.

REFERENCES AND NOTES

1. Abdelrahman TM, Younes AE. Recognizing Predictors of Ischemic Bowel in Patients with Mechanical Acute Small Bowel Obstruction - A Retrospective Study. *Med Sci* 2020, 24(105), 3527-3536
2. Al Salamah SM, Fahim F, Hameed AM, et al. How Predictive are the Signs and Symptoms of Small Bowel Obstruction. *Oman Med J*. 2012 Jul;27(4):281-4.
3. Blackbourne, L.H. (2017). *Surgical recall* (8th ed.). Philadelphia: Lippincott Williams & Wilkins.
4. Catena F, Di Saverio S, Kelly MD, et al. Bologna Guidelines for Diagnosis and Management of Adhesive Small Bowel Obstruction (ASBO): 2010 Evidence-Based Guidelines of the World Society of Emergency Surgery. *World J Emerg Surg*. 2011 Jan 21;6:5.
5. Chang YT, Huang YS, Chan HM, et al. Intestinal obstruction during pregnancy. *Kaohsiung J Med Sci*. 2006 Jan;22(1):20-3.
6. Cox MR, Gunn IF, Eastman MC, et al. The operative aetiology and types of adhesions causing small bowel obstruction. *Aust N Z J Surg*. 1993 Nov;63(11):848-52.
7. Huang X, Fang G, Lin J, et al. A Prediction Model for Recognizing Strangulated Small Bowel Obstruction. *Gastroenterol Res Pract*. 2018 Mar 26;2018:7164648.
8. Rice AD, Wakefield LB, Patterson K, et al. Development and Validation of a Questionnaire to Measure Serious and Common Quality of Life Issues for Patients Experiencing Small Bowel Obstructions. *Healthcare (Basel)*. 2014 Mar 7;2(1):139-49.
9. Taylor MR, Lalani N. Adult small bowel obstruction. *AcadEmerg Med*. 2013 Jun;20(6):528-44.