CODEN [USA]: IAJPBB ISSN: 2349-7750

INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES

http://doi.org/10.5281/zenodo.2555156

Available online at: http://www.iajps.com Research Article

KNOWLEDGE AND AWARENESS TOWARDS POSTOPERATIVE COMPLICATIONS AFTER APPENDECTOMY AMONG MEDICAL STUDENTS AND INTERNS IN TAIF UNIVERSITY, SAUDI ARABIA

Mohammad Eid Mahmoud Mahfouz[1], Althobaiti, Omar Mohammed A[2], Saif Saleh Alhamyani[2], Ahmad Atea Alharthy[2], Loaiee Faisal Ibrahim Halawani[2], Turki Muteb Saed Alotaibi[2], Tawfiq Zuhair Abdullah Al Laylah[2]

[1] Consultant surgeon and assistant professor of surgery at Taif university.

[2] Faculty of medicine, Taif University.

Abstract:

***Background**: Acute appendicitis is still the most prevalent reason for acute abdominal pain requiring operative procedure. Laparoscopic procedures may have lower risk of complications compared to traditional methods. However, Knowledge and awareness of medical staff towards post-operative complications needs to be evaluated.*

***Objective:** To investigate knowledge and awareness towards postoperative complications after appendectomy among medical students and interns.*

***Design and Setting:** a multicenter, cross-sectional study in Taif University, Saudi Arabia, included an online self-developed questionnaire that was distributed via link to Google forms, to medical students and interns. Only participants, who filled the questionnaire, were included in the analysis.*

***Statistical analysis:** Data is represented using descriptive statistics of counts and valid percentages (for categorical variables), Mean, standard deviations (SD), minimum and maximum values (for numerical variables). Student t-test was used to compare between means in different groups at a level of significance $p \leq 0.05$. Collected data will be analyzed using Statistical Package for the Social Sciences (SPSS).*

***Results:** 224 participants completed the questionnaire. There was a significant difference in knowledge between males and females (P=0.05), where females had higher level of knowledge than males. Also, there was a significant difference in knowledge between students and interns (P=0.001). Additionally, there was a significant difference (p=0.009) in the awareness level between different age groups with highest score (3.66 ± 1.12) recorded in the age group (21 to 30 years old). Moreover, there was a significant difference in total scores within different age groups (p=0.005). The age group (21 to 30 years old) showed the highest total scores(9.77 ± 2.08).*

***Conclusion:** Level of Knowledge and awareness of interns and medical students needs to be improved. Further studies to evaluate knowledge and awareness in other regions in Saudi Arabia are needed.*

Keywords: *Appendectomy, Appendicitis, Surgical complications, Awareness.*

Corresponding Author:
Althobaiti, Omar Mohammed A,
Email: omar.althobaiti.20199@gmail.com
Mobile: +966 5811 23 002

QR code

Please cite this article in press Althobaiti, Omar Mohammed A et al., ***Knowledge and Awareness towards Postoperative Complications after Appendectomy among Medical Students and Interns in Taif University, Saudi Arabia.,*** *Indo Am. J. P. Sci, 2019; 06(01).*

INTRODUCTION:

Appendectomy operation for management of acute appendicitis is considered the most prevalent emergency surgery operated globally [1]. Laparoscopic appendectomy has been regularly utilized to manage uncomplicated acute appendicitis during the past two decades [2]. It has the privilege of performing a tiny opening to get satisfactory visualization and give a way to abdominal cavity [3]. Many trials showed that the laparoscopic technique has lower morbidity compared to open appendectomy [4]. Morbidity is mainly attributed to wound infections, administered postoperative analgesics, and back to normal life pre operatively. These advantages have only been demonstrated for uncomplicated acute appendicitis [5].

Regarding complicated appendicitis, further data is still required to compare the superiority of one of the two techniques [6]. The most annoying problem is the incidence and morbidity caused due to postoperative intra-abdominal abscess [7]. Some trials also showed that there is no significant difference in the frequency of abscess development between both open and laparoscopic approaches [8].

Additionally, it is shown from previous trials that the condition of appendicitis at operative time changes the risk of developing post-surgical infection, where acute appendicitis constitutes about 30% risk of surgical site infection [9]; patients with confirmed gangrene can lead to higher rate of infection. Post-operative antibiotics can treat patients with perforated appendicitis in order to decrease the risk of bacteremia and sepsis [10].

Residents usually participate in appendectomy procedures. The job of resident during appendectomy can range from being the surgery assistant to being the primary surgeon [11]. During a conventional open appendectomy, the primary assistant, especially if it is an attending resident, significantly can affect the speed and flow of the operation [12]. Therefore, investigating the knowledge and awareness of medical residents during their study towards complications of appendectomy is crucial [13].

That's why the aim of this study is to examine the level of knowledge and awareness towards postoperative complications post appendectomy surgery in Taif University, Saudi Arabia among medical students and residents.

MATERIALS AND METHODS:

Study design:

This is a multicenter, cross-sectional study that was performed in Taif University, Saudi Arabia. An online self-developed questionnaire was distributed, via link to Google forms, to medical students and interns in Kingdom of Saudi Arabia. 224 participants completed the questionnaire. Only participants, who filled the questionnaire, were included in the analysis.

Data collection:

An online self-developed questionnaire was distributed, via link to Google forms, to medical students and interns. The questionnaire included 3 parts;

1- Participants' demographic data: Data about age, gender, level of education (student/ intern) and University.
2- Participants' knowledge: was assessed by 10 questions; one point is awarded for each correct answer, while zero point is awarded for: incorrect answer, or unanswered questions.
3- Participants' awareness: is assessed by 5 questions; one point is awarded for each correct answer, while zero point is awarded for: incorrect answer, or unanswered questions.

Statistical analyses:

Data is represented using descriptive statistics of counts and valid percentages (for categorical variables), Mean, standard deviations (SD), minimum and maximum values (for numerical variables). Student t-test was used to compare between means in different groups at a level of significance $p \leq 0.05$. Collected data will be analyzed using Statistical Package for the Social Sciences (SPSS).

RESULTS:

This multicenter, cross sectional study included 224 responding students and interns. The questionnaire aimed at assessing the responders' knowledge and awareness of medical students and interns toward post-operative complications of appendectomy. Descriptive tables and statistical analysis are shown below.

Responders' characters

Out of 224 responders, 110 (49.1%) females participated in the study while 114 (50.9%) males responded from both medical students and interns. Regarding age of responders, age ranged between 19 and 45 years old. Age was categorized into four subgroups including (<20 years old), (20 to 30 years old), (31 to 40 years old) and finally (41 to 50 years old). Highest responses (85.3%) were recorded from

age group (20 to 30 years old).

Turning to level of education, it was sub divided into either interns or students. Number of medical students (126 (56.3%) was much higher than interns (98 (43.8%)). All characters of responders are recorded in table 1.

Table 1. shows responders' characteristics.

	Frequency	Percent
Gender		
Female	**110**	**49.1**
Male	**114**	**50.9**
Level of education		
Intern	**98**	**43.8**
Student	**126**	**56.3**
Age groups		
<20	**23**	**10.3**
20-30	**191**	**85.3**
31-40	**8**	**3.6**
41-50	**2**	**0.9**

Knowledge Section:

Knowledge of participants towards post-operative complications was assessed through ten questions in the questionnaire. Knowledge section score was calculated out of 10 where every correct answer was given 1 point and every wrong answer was given zero point. Mean score is 6 ± 1.64, while scores ranged between 2 and 10. Table 2 shows frequencies and percent of correct and wrong answers of knowledge questions.

Table 2. Shows responses to knowledge questions in terms of frequencies and percent

Question	Correct Answers	Wrong Answers
Obese patients have a higher chance of developing a postoperative Intra-abdominal Abscess (in Laparoscopic appendectomy).	144 (64.3)	80 (35.7)
Older patients have a higher chance of developing postoperative complications.	185 (82.6)	39 (17.4)
Patients with complicated appendicitis have a lower chance of having postoperative surgical site infections.	180 (80.4)	44 (19.6)
Female gender is a risk factor for developing postoperative complications in appendectomy surgery.	121 (54)	103 (46)
In the presence of risk factors (such as obesity & perforated appendicitis), patients do not require closer postoperative care in order to identify intra-abdominal abscess after laparoscopic appendectomy	167 (74.6)	57 (25.4)

Moreover, Knowledge scores were compared over both genders, age groups and educational levels using student t-test. It was revealed that there was a significant difference in knowledge between males and females (P=0.05), where females had higher level of knowledge than males. Also, there was a significant difference in knowledge between students and interns (P=0.001). Interns had higher level of knowledge compared to students. Comparisons are shown in table 3

Table 3. shows a comparison of knowledge scores over different variables

		Knowledge Score	P Value
Gender	Male	5.79 ± 1.71	**0.05**
	Female	6.22 ± 1.54	
Educational level	Intern	6.42 ± 1.61	**0.001**
	Student	5.67 ± 1.59	
Age Groups	<20	5.35 ± 1.69	0.07
	21-30	6.12 ± 1.61	
	31-40	5.13 ± 1.72	
	41-50	6.00 ± 1.41	

Awareness section:

Additionally, awareness of interns and students was also evaluated through a set of five questions with one point for each question. Mean score was 3.56 ± 1.16, while the scores ranged from zero to 5 points. Also, awareness level was compared over both genders, age groups and educational level using student t-test. It was revealed that there was a significant difference (p=0.009) in the awareness level between different age groups with highest score (3.66 ± 1.12) recorded in the age group (21 to 30 years old). Responses to awareness questions is shown in table 4 while comparison is shown in table 5.

Table 4. Shows responses to awareness questions in terms of frequencies and percent

Question	Correct Answers	Wrong Answers
Obese patients have a higher chance of developing a postoperative Intra-abdominal Abscess (in Laparoscopic appendectomy).	144 (64.3)	80 (35.7)
Older patients have a higher chance of developing postoperative complications.	185 (82.6)	39 (17.4)
Patients with complicated appendicitis have a lower chance of having postoperative surgical site infections.	180 (80.4)	44 (19.6)
Female gender is a risk factor for developing postoperative complications in appendectomy surgery.	121 (54)	103 (46)
In the presence of risk factors (such as obesity & perforated appendicitis), patients do not require closer postoperative care in order to identify intra-abdominal abscess after laparoscopic appendectomy	167 (74.6)	57 (25.4)

Table 5. shows a comparison of awareness scores over different variables

		Awareness Score	P Value
Gender	Male	3.52 ± 1.13	0.59
	Female	3.60 ± 1.19	
Educational level	Intern	3.58 ± 1.17	0.79
	Student	3.54 ± 1.16	
Age Groups	<20	3.04 ± 1.18	**0.009**
	20-30	3.66 ± 1.12	
	31-40	3.00 ± 1.6	
	41-50	2.00 ± 0.1	

Total score

Finally, total score was calculated for both knowledge and awareness. Total score was out of 15 points, mean score is 9.56 ± 2.20 and scores ranged between 3 to 15 points. Additionally, total score was compared using student t-test over different variables. There was a significant difference in total scores within different age groups (p=0.005). the age group(21 to 30 years old) showed the highest scores(9.77 ± 2.08). Table 6 describes the comparison in details.

Table 6. shows a comparison of total score over different variables

		Total Score	P Value
Gender	Male	9.31 ± 2.24	0.08
	Female	9.82 ± 2.14	
Educational level	Intern	10 ± 2.19	0.78
	Student	9.21 ± 2.16	
Age Groups	<20	8.39 ± 2.44	**0.005**
	21-30	9.77 ± 2.08	
	31-40	8.13 ± 2.94	
	41-50	8.00 ± 1.41	

DISCUSSION:

Uncomplicated appendectomy is considered the most common surgery performed on emergency basis. Although risk of complications is considered low, knowledge and awareness of interns and medical students regarding these complications are unknown, especially in Saudi Arabia.

In the present work, knowledge and awareness of interns and medical students towards post-operative complications of appendectomy was assessed. It was found that age group between 20 and 30 years old from Taif University showed the highest rate of responses. Knowledge of females was significantly better than males, also interns got higher level of knowledge compared to students. As for awareness, participants aging between 20 and 30 years old scored significantly higher than any other age group. Same figures were also shown in the total score.

The risk of complications post appendectomy and the impact of presence of residents and medical students in operating room during appendectomy were evaluated. However, their level of knowledge and awareness was not evaluated before. Scarborough [14] *et al* , for instance, evaluated the impact of participation of residents during appendectomy on incidence of complications postoperatively. The study had a retrospective design and included 54467 procedures [14]. Scarborough et al concluded that the participation of residents during appendectomy could increase the post-operative risk of complications. This could be attributed to the low levels of knowledge and awareness of the residents [14].

In the present study, the knowledge and awareness of interns and students towards postoperative complications of appendectomy were evaluated. It was found that both levels of knowledge and awareness among students and interns were considered low, especially for students, this complies with the same conclusion of Scarborough et al and highlights the importance of preparing strong educational programs for medical students and staff on post-operative complications of appendectomy.

On the contrary, Graat [15] *et al* showed different results. This study examined the impact of residents' participation in appendectomy and the risk of complications postoperatively. The study was done retrospectively and examined 1538 procedure during nine years for complications [15]. The study concluded that residents' practice is considered safe even if they are unsupervised. This was further explained by the high levels of training that their residents had [15].

Although the findings are contradicting to that of Scarborough [14] et al, it is observed that Scarborough et al, Graat [15] et al and the present work insist on the importance of high quality training to raise the level of knowledge and awareness of medical personnel in order to guarantee a safe practice environment. Further prospective studies could solve this debate.

Another study evaluated the impact of attending resident postgraduate students during laparoscopic appendectomy in pediatrics. Naiditch [16] et al examined all patients' files who had appendectomy over four years. Naiditch [16] et al found that only operative time was prolonged but rate of complications was the same as procedures done without presence of student. However, the retrospective nature of the study and the relatively small sample size make the results of the study unreliable.

The present work did not examine the effect of attendance of students during operations, instead, students' and interns' level of knowledge and awareness about the postoperative complications was evaluated. The level of knowledge and awareness were found to be unsatisfactory and require further improvement.

To our Knowledge, this is the first study to evaluate the level of knowledge and awareness of students and interns towards postoperative complications of appendectomy especially in Saudi Arabia. Further studies are required to evaluate other areas.

CONCLUSION:

Level of knowledge and awareness of interns and students regarding complications of appendectomy is considered low and needs to be developed through further educational workshop and training sessions. Future trials are required to evaluate the participation of interns and students in surgical setting in Saudi Arabia.

ACKNOWLEDGEMENT:

The study team would like to thank Hasan Othman Alshehri, Nawaf khaled Althobaiti and Bader Abdulrahman Almalki for their efficient contribution as data collectors."

REFERENCES:

1. Giesen LJ, van den Boom AL, van Rossem CC, den Hoed PT, Wijnhoven BP. Retrospective multicenter study on risk factors for surgical site infections after appendectomy for acute appendicitis. Digestive surgery. 2017;34(2):103-7.
2. Advani V, Ahad S, Gonczy C, Markwell S, Hassan I. Does resident involvement effect surgical times and complication rates during laparoscopic appendectomy for uncomplicated appendicitis? An analysis of 16,849 cases from the ACS-NSQIP. The American Journal of Surgery. 2012 Mar 1;203(3):347-52.
3. Tuggle KR, Ortega G, Bolorunduro OB, Oyetunji TA, Alexander R, Turner PL, Chang DC, Cornwell III EE, Fullum TM. Laparoscopic versus open appendectomy in complicated appendicitis: a review of the NSQIP database. Journal of Surgical Research. 2010 Oct 1;163(2):225-8.
4. Patel SP, Gauger PG, Brown DL, Englesbe MJ, Cederna PS. Resident participation does not affect surgical outcomes, despite introduction of new techniques. Journal of the American College of Surgeons. 2010 Oct 1;211(4):540-5.
5. Tseng WH, Jin L, Canter RJ, Martinez SR, Khatri VP, Gauvin J, Bold RJ, Wisner D, Taylor S, Chen SL. Surgical resident involvement is safe for common elective general surgery procedures. Journal of the American College of Surgeons. 2011 Jul 1;213(1):19-26.
6. Coakley BA, Sussman ES, Wolfson TS, Bhagavath AS, Choi JJ, Ranasinghe NE, Lynn ET, Divino CM. Postoperative antibiotics correlate with worse outcomes after appendectomy for nonperforated appendicitis. Journal of the American College of Surgeons. 2011 Dec 1;213(6):778-83.
7. Rafiq MS, Khan MM, Khan A, Jan H. Evaluation of postoperative antibiotics after non-perforated appendectomy. J Pak Med Assoc. 2015 Aug 1;65(8):815-7.
8. Allemann P, Probst H, Demartines N, Schäfer M. Prevention of infectious complications after laparoscopic appendectomy for complicated acute appendicitis—the role of routine abdominal drainage. Langenbeck's archives of surgery. 2011 Jan 1;396(1):63-8.
9. Andert A, Alizai HP, Klink CD, Neitzke N, Fitzner C, Heidenhain C, Kroh A, Neumann UP, Binnebösel M. Risk factors for morbidity after appendectomy. Langenbeck's archives of surgery. 2017 Sep 1;402(6):987-93.
10. Schlottmann F, Sadava EE, Pena ME, Rotholtz NA. Laparoscopic appendectomy: Risk factors for postoperative intraabdominal abscess. World journal of surgery. 2017 May 1;41(5):1254-8.
11. Farach SM, Danielson PD, Walford NE, Harmel Jr RP, Chandler NM. Operative findings are a better predictor of resource utilization in pediatric appendicitis. Journal of pediatric surgery. 2015 Sep 1;50(9):1574-8.
12. March B, Gillies D, Gani J. Appendicectomies performed> 48 hours after admission to a dedicated acute general surgical unit. The Annals of The Royal College of Surgeons of England. 2014 Nov;96(8):614-7.
13. Markides G, Subar D, Riyad K. Laparoscopic versus open appendectomy in adults with complicated appendicitis: systematic review and meta-analysis. World journal of surgery. 2010 Sep 1;34(9):2026-40.
14. Scarborough JE, Bennett KM, Pappas TN. Defining the impact of resident participation on outcomes after appendectomy. Annals of surgery. 2012 Mar 1;255(3):577-82.
15. Graat LJ, Bosma E, Roukema JA, Heisterkamp J. Appendectomy by residents is safe and not associated with a higher incidence of complications: a retrospective cohort study. Annals of surgery. 2012 Apr 1;255(4):715-9.
16. Naiditch JA, Lautz TB, Raval MV, Madonna MB, Barsness KA. Effect of resident postgraduate year on outcomes after laparoscopic appendectomy for appendicitis in children. Journal of Laparoendoscopic & Advanced Surgical Techniques. 2012 Sep 1;22(7):715-9.