

## The Prevalence of Cholecystectomy and its Associated Risk Factors and Complications in Saudi Arabia

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### ABSTRACT

**Background:** despite the modern life and people knowledge about certain diseases, the prevalence of cholecystectomy procedures have been increased in the recent years in Saudi Arabia.

**Objectives:** prevalence of cholecystectomy is almost known in the modern countries. This study was done to know the prevalence cholecystectomy procedures in Saudi Arabia.

**Methods:** a cross-sectional study on knowing the prevalence of cholecystectomy procedures in Saudi Arabia was distributed among men and women from January to February 2018 on 523 participants on many different social media platforms.

**Results:** 6.5% of the participants had done cholecystectomy procedure. 32.4% of the participants who had the procedure suffered from post procedure complications. Regarding risk factors that may lead to cholecystectomy procedure, 45.5% of the participants had a positive family history of cholecystectomy, 44.5% of the participants were obese, 27.6% were smoker, 25.8% ate high fat diet, 17.5% suffered from chronic constipation, 12.6% suffered from chronic cough, 8.3% had major surgeries, 7.7% were diabetic, 5.2% had been admitted to ICU, 4.6% suffered from urinary retention, 2.1% had major trauma, 1.25% had been diagnosed with atherosclerosis disease and 37.7% were having no risk factors. 61.4% of the participants thought that cholecystectomy is the definite treatment of cholecystitis.

**Conclusion:** at the end of this study, we found out that cholecystectomy procedure is increased among people in Saudi Arabia and multiple people are suffering from many risk factors that may lead to cholecystitis and then cholecystectomy procedure eventually

**Keywords:** cholecystectomy , obesity , smoking.

### INTRODUCTION

Gallstone disease is the most common of abdominal diseases in which patients are admitted to hospital for immediate intervention in the developing countries<sup>(1)</sup>. Gall stones are the most common risk factor for admission to emergency room and surgical intervention that cause a significant worldwide health impact and economic issue<sup>(2)</sup>. Gall stones are known as accumulation of solid material as cholesterol, bile acids and pigmented components in the biliary tract system<sup>(3,4,5)</sup>. The common risk factors that contribute to gallstones are elderly age, female gender, obesity, lack of exercise, major surgeries, pregnancy and critically ill patients<sup>(6,7,8)</sup>. Furthermore, increase levels of serum lipids and glucose above normal are associated with gallstone diseases<sup>(9)</sup>. Multiple studies showed that active physical activity, modifying life style, normal

body weight and avoiding spicy and fast fried foods would result in prevention of gallstones related diseases rates<sup>(10,11,12,13)</sup>. Cholecystectomy is the world gold standard for symptom relief in uncomplicated symptomatic cholelithiasis<sup>(14)</sup>. However, cholecystectomy is not always required because in up to 31 % of patients, conservative management results in optimal outcomes regarding symptom control<sup>(15)</sup>. Some patients do not give a history of a biliary colic but report nonspecific abdominal symptoms<sup>(16)</sup>. Never the less, up to 41 % of patients still report post-cholecystectomy pain, suggesting inefficient benefit of cholecystectomy<sup>(17)</sup>. The mismatching of symptoms and procedure leads to a variation practice. This happens when there is uncertainty about the best option for effective intervention or when different criteria are applied in the decision to perform surgery<sup>(18)</sup>.

**MATERIALS AND METHODS**

A cross sectional study involving 523 men and women participants from all over Saudi Arabia was distributed from January to February 2018. The study was about a self-administered questionnaire that was distributed through a web site link to all participants through a different social media platforms. The questionnaire involved 8 questions that included two parts ; part one consisted of asking the participants questions about their gender , age and marital status. Part two of the questionnaire consisted of general questions regarding cholecystectomy, complications and its associated risk factors like whether the participants had undergone cholecystectomy procedure or not, whether they suffered from complications following the procedure or not.

Furthermore, the participants were also asked if they had a positive family history of cholecystectomy or not. They were also asked if they were suffering from one or more risk factors like increased body weight, diagnosed with diabetes mellitus, diagnosed with atherosclerosis disease, underwent major surgeries, major trauma, admitted in ICU before, follow a high fat diet, suffering chronic cough, suffering from chronic constipations, suffering from urinary retention or smoking. Lastly, the participants were also asked whether they think that cholecystectomy is the definite treatment or not. Statistics were used to describe the participants answer using numbers and percentages.

Our answers were compared for different questions within the different groups using Pearson chi-square test. The significant of statistics was set at  $p < 0.05$  and analysis was performed using IBM SPSS statistics, version 23 ( IBM, Armonk, NY,USA).

**The study was done after the approval of the ethical board of University of Hail.**

**RESULTS**

A total of 523 participants participated in the study 60.2% of them were men and 39.8% were women ( table 1). More than half of the participants were single 65.8% (table 1). In relation to age distribution, more than half of the participants were between the ages of 18 to 30 years old 70.2% and the least of the participants were over 60 years old ( table 2). Regarding cholecystectomy, 6.5% of the participants underwent cholecystectomy procedure ( table 3). Almost one third of the participants 32.4% who underwent the cholecystectomy procedure suffered from complications following the procedure (table 4). For risk factors of

cholecystectomy, 45.5% of the participants had a positive family history of cholecystectomy, 44.5% of the participants were obese, 27.6% of them were smokers, 25.8% were having a high fat diet, 17.5% were suffering from chronic constipation, 12.6% were suffering from chronic cough, 8.3% underwent major surgeries at certain point of time, 7.7% were diabetic, 5.2% were admitted to the ICU, 4.6% were suffering from urinary retention, 2.1% had major traumas, 1.2% were diagnosed with atherosclerosis disease and 37.7% of them were risk factors free (table 5).

61.4% of the participants think that the definite treatment for cholecystitis is cholecystectomy procedure (table 6).

**Table (1):** gender and marital status

Gender	Frequency	Percentage
Men	315	60.8
Women	208	39.2
Total	523	100
Marital status		
Men	344	65.8
Women	179	34.2
Total	523	100

**Table (2):** age distribution

Age	Frequency	Percentage
0-18	26	5
18-30	367	70.2
30-45	92	17.6
45-60	27	5.2
>60	11	2
Total	523	100

**Table (3):** cholecystectomy procedure

Cholecystectomy	Frequency	Percentage
Yes	34	6.5
No	489	93.5
Total	523	100

**Table (4):** post surgery complications

Post-surgery complications	Frequency	Percentage
Yes	11	32.4
No	23	67.6
Total	34	100

**Table (5):** risk factors of cholecystectomy

		Frequency	Percentage
Positive family history of cholecystectomy	Yes	238	45.5
	No	285	54.5
	Total	523	100
Obese	Yes	145	44.5
	No	181	55.5
	Total	326	100
Smoker	Yes	90	27.6
	No	236	72.4
	Total	326	100
High fat diet	Yes	84	25.8
	No	242	74.2
	Total	326	100
Chronic constipation	Yes	57	17.5
	No	269	82.5
	Total	326	100
Chronic cough	Yes	41	12.6
	No	285	87.4
	Total	326	100
Underwent major surgeries	Yes	27	8.3
	No	299	91.7
	Total	326	100
Diabetic	Yes	25	7.7
	No	301	92.3
	Total	326	100
Admitted to ICU	Yes	17	5.2
	No	309	94.8
	Total	326	100
Urinary retention	Yes	15	4.6
	No	311	95.4
	Total	326	100
Major traumas	Yes	7	2.1
	No	319	97.9
	Total	326	100
Atherosclerosis	Yes	4	1.2
	No	322	98.8
	Total	326	100
Risk free	Yes	197	37.7
	No	326	62.3
	Total	523	100

**Table (6):** think cholecystectomy is the definite treatment:

Cholecystectomy is the definite treatment	Frequency	Percentage
Yes	321	61.4
No	202	38.6
Total	523	100

## DISCUSSION

The gallstone diseases are the most common cause of acute abdominal diseases in which patients are admitted to hospital for immediate intervention in the developing countries<sup>(1)</sup>. This study was carried out to know the prevalence of cholecystectomy and its associated risk factors and complications in Saudi Arabia. In our study, we found that cholecystectomy procedure rate is increased in Saudi Arabia population. Among the 523 participants, 34 of them had a cholecystectomy procedure at a certain point of time with a 6.5% rate affection. Cholecystectomy in Saudi Arabia is one of the most common abdominal procedures in general surgical wards. Cholecystectomy constitute about 47% of major and 23% of total general surgical operations in a study done in Abha city, Saudi Arabia<sup>(19)</sup> and about 15%-50% of all laparotomies in two different studies in Medina city, Saudi Arabia<sup>(20)</sup>. In the present study, post cholecystectomy complications occurred among 11 out of the 34 participants with an affection rate of 34.2%. Regarding the risk factors and associated conditions, this study revealed that 238 of the 523 participants had a positive family history. Also, 145 of the participants suffered from obesity, 90 participants were smoker, 84 had eaten high fat diet, 57 suffered from chronic constipation and only 4 patients were diagnosed with atherosclerosis disease out of 326 participants. More than one third of the patients were having no risk factors that may lead to cholecystectomy eventually. More than half of the participants think cholecystectomy is the definite treatment of cholecystitis. The limitation of this study was that we could not compare most of our results with other studies that were done in Saudi Arabia since they were few and our sample size is not that big enough.

## CONCLUSION

We can conclude that cholecystectomy procedure rate and its associated risk factors are increased among individuals of Saudi Arabia population. Participants of this study has multiple risk factors and associated conditions that may lead to cholecystectomy procedure eventually.

Doctors and ministry of health should work hand to hand to educate people about the risk factors that may lead to cholecystectomy and how to decrease these risk factors in case they were present. People in the other hand, should seek medical help once they feel any unusual pain feelings in the abdomen.

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