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ASSESSING QUALITY OF LIFE AFTER LAPAROSCOPIC CHOLECYSTECTOMY INSAUDI ARABIA AND THE EFFECT OF LOW-FAT DIET: A CROSS-SECTIONALSTUDY

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Abstract:

Background: Evaluation of quality of life, patient satisfaction, and postoperative recovery are essential for determining if the surgery was successful in terms of the future health of the patient.The purpose of this study is to evaluate the quality of life and effect of diet modifications among patients who had laparoscopic cholecystectomy in Saudi Arabia.

Methodology: From July to November 2024, a cross-sectional study was carried out with a focuson patients in Saudi Arabia who had received LC for gallstone disease. We used a comprehensive questionnaire that included both closed- and open-ended questions to provide a comprehensive understanding to assess patient happiness, quality of life, and the perceived value of LC. Some questions were added to assess the effect of a low-fat diet postoperatively.

Results: The study involved 409 participants. Overall, about 76.8% felt satisfied with the care they received and reported positive experiences. However, a significant number, 50.1%, did encounter complications during their recovery. 9.7% of the participants observed improvements in their quality of life after the surgery, although nearly 40% (39.6%) reported that the pain theyexperienced was greater than they had expected. Many participants felt that the information provided before the surgery could have been better.

Conclusion: Although satisfaction rates are very high, attention should also be paid for taking account of the complications and adverse effects reported by participants. Longitudinal QoL outcomes from this surgical cohort along with diverse demographic and regional variables in identification of determining recovery factors need to be studied to improve patient care.
Education is needed for better outcomes and better healthcare experience in this population, especially about dietary management post-surgery.

Keywords: Gallstones, cholecystectomy, low-fat diet, gallbladder.

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Introduction:

Gallstones are stones that can be found in the gallbladder or biliary tract, and they could be asymptomatic or symptomatic, once symptoms are developed it is called Gallstone disease [1]. Gallstone disease is a prevalent disease globally and locally affecting 10% - 20% of the global adult population, and more than 20% will eventually develop symptomatic gallstones in their lifetime [2]. The data is scarce regarding Gallstone disease prevalence in Saudi Arabia but there are some studies in different regions such as Riyadh and Abha, showing a prevalence of 8.6% and 11.7% respectively [3,4].

Gallstones can be divided based on their composition. The most common type is Cholesterol stones, which are comprised mostly of cholesterol and typically radiolucent. Pigment stones are the second most common, primarily composed of Calcium Bilirubinate, and are seen withincreased red cell destruction. In addition, mixed types are often radiopaque due to their calcium content [5]. Multiple risk factors have been identified such as the patient's sex, race, and age, as well as metabolic disorders such as Hypertension, obesity, and Type 2 Diabetes Mellitus [6–8].

Historically, open cholecystectomy was the treatment of choice for symptomatic gallstone diseaseas an effectively safe option for patients [9]. The laparoscopic cholecystectomy was introduced and revolutionized the treatment of gallstone disease because it led to an earlier return to full activity [10]. Laparoscopic Cholecystectomy as of today is the gold standard treatment for symptomatic gallstone disease [11].

Quality of life post laparoscopic cholecystectomy has been a topic of interest for many years, as itis essential to the optimal recovery of patients. A 2022 longitudinal study conducted in Nepal was carried out on 72 patients who underwent laparoscopic cholecystectomy using the Gastrointestinal Quality of Life Index (GIQLI) six weeks before and after laparoscopic cholecystectomy showed a statistically significant increase in GIQLI score after the surgery as opposed to before the surgery with values (133 vs 111.625) respectively [12]. Another 2010 study conducted in China assessing (GIQLI) preoperatively and 12 months after the surgery showed a statistically significant improvement in the total (GIQLI) score of 19.1% [13]. Furthermore, in a study conducted in 2017on 147 patients who had undergone emergent or elective cholecystectomy where they were sent validated Patient-Reported Outcomes (PROMS) questionaries. Out of the 147 patients, 132 cases (90%) were managed by laparoscopic cholecystectomy. 96 (72%) patients were reported to be very satisfied while 36 (27%) patients were reported not very satisfied [14]. Additionally, a study was carried out in 2022 in Pakistan on 70 patients undergoing Laparoscopic cholecystectomy in which GIQLI questionnaires were given at admission and 6 weeks postoperatively. The GIQLI score pre-treatment was 94.64 and post-treatment was 106.09 with a mean change of 11.44 and a p-value of 0.001 showing a statistically significant difference [15]. Moreover, a cross-sectional study was carried out in Saudi Arabia in 2023 that was conducted on 886 who underwent laparoscopic cholecystectomy. Patients were given extensive questionaries using closed and open-ended question showed that 550 (62.1%) patients reported moderate improvement in quality-of-life postoperation, 10 (1.1%) patients experienced no change, 245(27.7%) patients reported significant improvement

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while 75 (8.5%) patients reported slight improvement and 5 (0.6%) patients declinedto answer [16]**.** On the other hand, reports from Saudi Arabia indicated a greater frequency of post- cholecystectomy syndrome than from other places [17]. Although dietary modifications are frequently advised, the results of the research that were done indicate that there is insufficient data to support these interventions for symptom relief and bettering post-cholecystectomy outcomes [18]**.** More research is required to determine the relationship between disease-associated anxiety and post-laparoscopic cholecystectomy diarrhea [19]**.**

While most patients have a resolution of their biliary pain after a cholecystectomy, dyspeptic symptoms might worsen or go simultaneously with discomfort [20]**.** A low-fat diet can be recommended following a cholecystectomy, depending on the patient's health and the surgeon's judgment, to help reduce gastrointestinal issues Mostafa 2020 [21]**.** Patient satisfaction was good,but more has to be done to raise the general public's knowledge of laparoscopic surgery and to enhance the infrastructure, surgical capacity, and laparoscopic equipment [22]**.** Among the existing studies, due to the insignificant amount of data regarding this topic in Saudi Arabia, we choose to conduct this study**.**

Objective:

This study's primary goal was to assess patient's quality of life following laparoscopic cholecystectomy and the effect of a low-fat diet in Saudi Arabia.

Methodology:

Study design and setting:

A Cross-sectional questionnaire study conducted across the Kingdom of SaudiArabia between July - November 2024. This study includes patients who underwent laparoscopic cholecystectomy among the general population in various hospitals across Saudi Arabia.

Sample Size:

The sample size was calculated by (Epi Info) at 384 individuals at a confidence interval (CI) =95% with consideration of the standard deviation of (=1.96|) and the maximum acceptable margin of error of 5% with an expected frequency of 50%.

Inclusion criteria and Exclusion criteria:

All males and females who have undergone laparoscopic cholecystectomy and are living in Saudi Arabia. This includes Saudi and non-Saudi with ages above 18 years. All patients who declined participation in the study were excluded.

Method for data collection and instrument (*Data collection Technique and tools)*:

The data collection technique and instrument were involving the use of a self-administered valid questionnaire in English and Arabic. The questionnaire was based on a comprehensive questionnaire that includes both closed- and open-ended questions and include inquiries aboutgeneral well-being,

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limitations of physical activities, and daily activities [16].
Another questionnaire was used named a Nutritional Habit Diagnosis Form, which was designedto investigate the physiological issues that arise from certain foods consumed by persons following laparoscopic cholecystectomy, based on the literature [23].

Pilot study
The questionnaire was distributed to 20 individuals and asked to fill it. This is performed to test the simplicity of the questionnaire and its achievability.

Analyzes and entry method:
The Microsoft Excel 2016 program for Windows was used to collect and input data. Subsequently,the data was loaded into version 25 of the Statistical Package for Social-Science Software (SPSS)to conduct additional statistical analysis.

Results:

Table (1) displays various demographic parameters of the participants with a total number of (409).An age distribution shows a concentrated middle-aged population with 26.9% centred between 36and 45 and 26.7% of people below 25 years old. At 75.6%, the gender representation is overwhelmingly female at, which may indicate a gender bias on the study side, and at 60.4% the marital status presents a dominance of married individuals. The participants are spatially dispersedregionally, with most of the population being found in the central and western regions, combined.There is also a clear pattern with respect to educational attainment: More than half of the participants have a bachelor's degree, indicating they're a mostly educated group. There are also astriking number of unemployed (37.9%) who, in terms of occupational status, presumably have some underlying socioeconomic challenge or reflect recent labor market conditions.

Table (1): Sociodemographic characteristics of participants (n=409)

Parameter		***No.***	***Percent (%)***
Age ***(Mean: 36.5, STD: 13.0)***	25 years or less	109	26.7
	26 to 35	96	23.5
	36 to 45	110	26.9
	More than 45	94	23.0
Gender	Female	309	75.6
	Male	100	24.4
Marital status	Single	136	33.3
	Married	247	60.4
	Divorced	20	4.9
	Widowed	6	1.5
Region of residence	Northern region	38	9.3

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	Southern region	42	10.3
	Central region	122	29.8
	Eastern region	83	20.3
	Western region	124	30.3
Educational level	Primary school	12	2.9
	Intermediate school	8	2.0
	Secondary school	78	19.1
	Diploma	53	13.0
	Bachelor's degree	204	49.9
	Postgraduate degree	32	7.8
	No academic qualification	22	5.4
Occupational status	Student	85	20.8
	Employed	133	32.5
	Not employed	155	37.9
	Business	12	2.9
	Retired	24	5.9

As shown in figure 1, The data ascertains that for a whole range of 409 participants, there is a predominantly positive response to the assessment of the overall satisfaction with the laparoscopic cholecystectomy procedure. Especially, 165 of these people (40.4% of the sample) were 'Very Satisfied,' and 149 (36.4%) listed themselves as 'Satisfied'. This indicates that a total of 314 respondents, i.e. 76.8%, approved the procedure. However, the levels of dissatisfaction were significantly lower as only 24 folks (5.9%) said they were "Dissatisfied," and 17 participants (4.2%) took the step further and declared themselves "Very Dissatisfied." In addition to this, another 54 individuals (13.2%) remained neutral in their assessment.

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Figure (1): Illustrates satisfaction with laparoscopic cholecystectomy among participants.

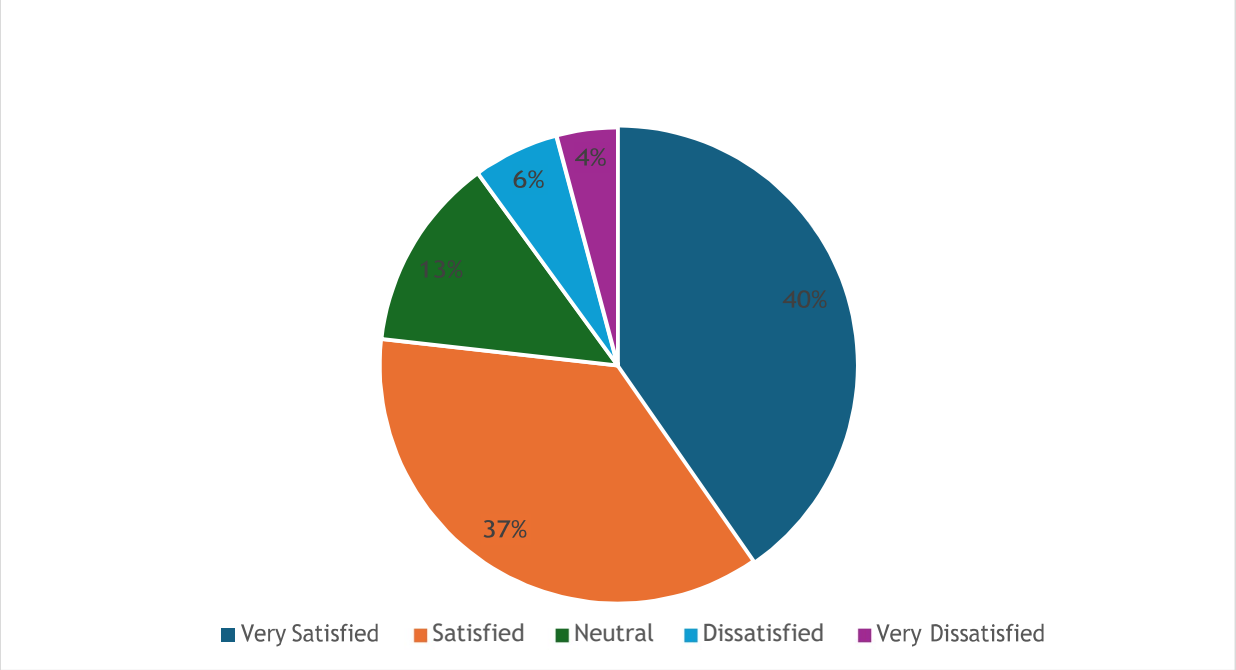

Table 2 presents useful information about patient perceptions and outcomes post laparoscopic cholecystectomy for a cohort of 409 participants. About 76.7% of respondents responded positively to laparoscopic approach to removal of the gallbladder, expressed by the overall satisfaction with the procedure. Nevertheless, it is remarkable that half (50.1%) of the individualsreported complications or adverse effects, which warrants further study of the types and magnitudes of these complications to promote patient safety and procedural effectiveness. In addition, these prospects were manifested by a high 79.7 percent of respondents who asserted thatthey experienced some quality-of-life improvement following is surgery. Although 60.4 percent rated postoperative pain as expected or less than expected, the large proportion (39.6 percent) experiencing pain greater than expected suggests a need for better pain management strategies. Moreover, a high proportion of patients (29.3%) were still limited to their daily activities, suggesting that further counselling and post-operative support may be needed to better enable recovery.

Table (2): Parameters related to general questions post laparoscopic cholecystectomy (n=409).

Parameter		***No.***	***Percent (%)***
How would you rate your overall satisfaction with the laparoscopic cholecystectomy procedure?	Very Satisfied	165	40.3
	Satisfied	149	36.4
	Neutral	54	13.2
	Dissatisfied	24	5.9
	Very Dissatisfied	17	4.2
	No	204	49.9

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Did you experience any complications or adverse effects?	Yes	205	50.1
How would you rate the improvement in your quality of life?	Significant Improvement	183	44.7
	Moderate Improvement	143	35.0
	Slight Improvement	36	8.8
	No Change	35	8.6
	Decline	12	2.9
Compared to your expectations, how would you rate the postoperative pain?	Much Less Than Expected	113	27.6
	As expected	134	32.8
	More Than expected	88	21.5
	Much More Than Expected	74	18.1
Did you experience any limitations in daily activities?	No	289	70.7
	Yes	120	29.3
How satisfied are you with the postoperative care?	Very Satisfied	177	43.3
	Satisfied	149	36.4
	Neutral	54	13.2
	Very Dissatisfied	29	7.1
Any recurrence of gallstone-related symptoms?	No	343	83.9
	Yes	66	16.1
How would you rate the financial burden?	Very Affordable	87	21.3
	Affordable	68	16.6
	Neutral	193	47.2
	Expensive	46	11.2
	Very Expensive	15	3.7
Any pre-existing conditions affecting recovery?	No	298	72.9
	Yes	111	27.1
How well were you informed about the procedure's risks and benefits?	Very Well Informed |	153	37.4
	Well Informed |	62	15.2
	Moderately Informed	81	19.8
	Poorly Informed|	72	17.6
	Not Informed at all	41	10.0

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As shown in figure (2), The survey of the 409-respondent total sample shows a remarkably favourable perception of the professionalism and competence of the healthcare team. Of particular interest, 72.8% of respondents rated the team's performance as 'Excellent' and 298 specifically mentioned being clearly the region's best team in terms of their skills and professionalism. Furthermore, 19.1% of respondents agreed that the service was 'Good,' something which 78 individuals agreed was satisfactory. In contrast, perceptions were more negative among those who rated the healthcare team as 'Fair' or 'Poor,' 22 (5.4%) and 11 (2.7%) respondents, respectively.

Figure (2): Illustrates healthcare team's professionalism according to participants.

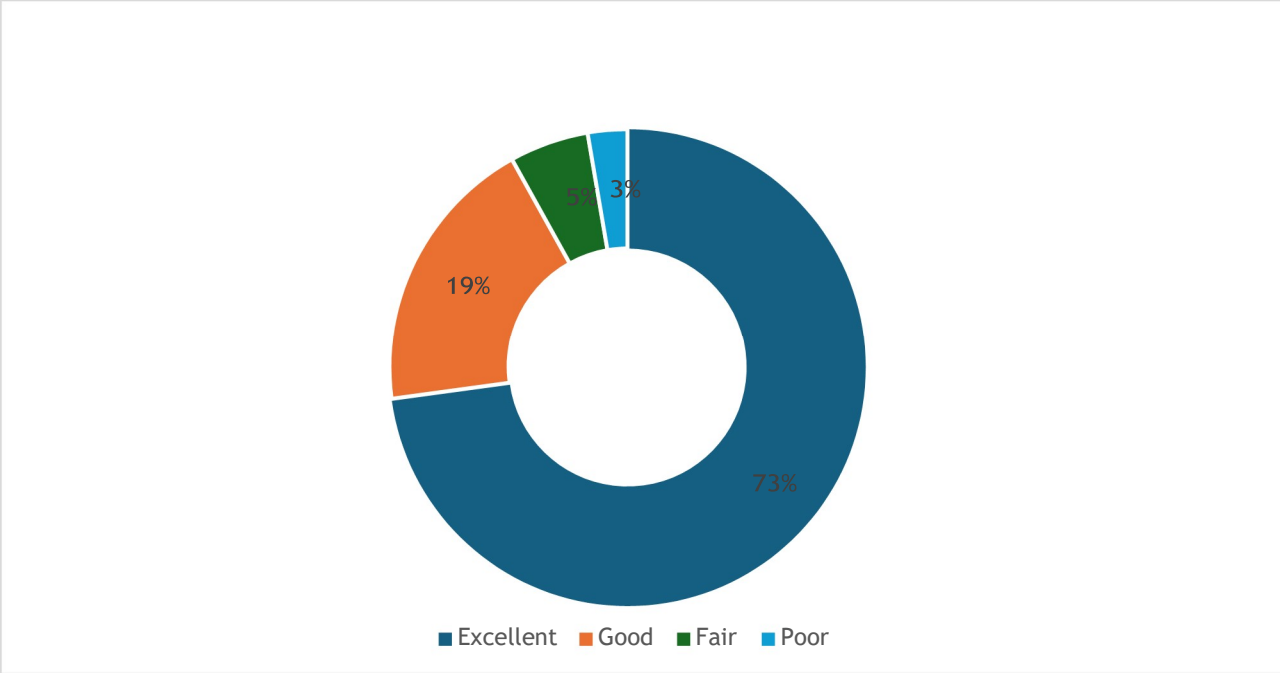

Table 3 presents data on participant satisfaction following laparoscopic cholecystectomy as a sample of 830 people. Overall, the findings indicate a typically positive response to various dimensions of their surgical experience. Here in particular, 46% said their communication was rated as excellent with the surgical team, suggesting a good rapport and clarity of communicationduring preoperative interactions. However, a varying 21.8% felt inadequate preoperative information, suggesting that a potential for improvement existed. Variation in response to healthcare team responsiveness, with nearly half as neutral towards their concerns, identified an opportunity for further engagement with patients. Sixty-six-point seven percent of respondents expressed satisfaction regarding postoperative care and were supported during recovery. However,
88.8 percent also confirmed effective pain management, a critical part in overall satisfaction. Finally, the data also shows that it is willing to recommend procedure as 56.5% said they would definitely recommend it.

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Table (3): participants' satisfaction levels post laparoscopic cholecystectomy (n=409).

Parameter		*No.*	*Percent (%)*
How would you rate communication with the surgical team?	Excellent	188	46.0
	Good	103	25.2
	Fair	86	21.0
	Poor	32	7.8
Were you given adequate information regarding preoperative preparations?	No	89	21.8
	Yes	320	78.2
How would you rate the responsiveness to your concerns before the procedure?	Very Responsive	89	21.8
	Responsive	103	25.2
	Neutral	180	44.0
	Not Very Responsive	20	4.9
	Not Responsive at All	17	4.2
Clarity of instructions for postoperative care?	Very Clear	145	35.5
	Clear	124	30.3
	Neutral	90	22.0
	Unclear	37	9.0
	Very Unclear	13	3.2
Did you feel supported during recovery?	No	136	33.3
	Yes	273	66.7
How satisfied were you with the information about complications?	Very Satisfied	104	25.4
	Satisfied	134	32.8
	Neutral	99	24.2
	Dissatisfied	47	11.5
	Very Dissatisfied	25	6.1
How would you rate the healthcare team's professionalism and competence?	Excellent	298	72.9
	Good	78	19.1
	Fair	22	5.4
	Poor	11	2.7
Was pain management addressed effectively?	No	46	11.2
	Yes	363	88.8
Satisfaction with the nursing care?	Very Satisfied	212	51.8
	Satisfied	126	30.8
	Neutral	43	10.5
	Dissatisfied	12	2.9
	Very Dissatisfied	16	3.9
Would you recommend this	Definitely Yes	231	56.5

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procedure?	Probably Yes	99	24.2
	Unsure	38	9.3
	Probably No	20	4.9
	Definitely No	21	5.1

Table 4 provides a good framework for understanding the quality of life in which the participants have lived, after laparoscopic cholecystectomy in various physical, mental and social terms. Of those surveyed, 49.1% gave their overall physical wellbeing an excellent rating while an impressive 76.3% reported improvement in digestion and appetite post-surgery. Also, an impressive 71.9% reported being pleased with their capacity to participate in physical activities, indicating generally favourable effects of the procedure on a person's personal life. However, 50.6percent said their state in that area was excellent, while 45.2 percent said they had experienced changes in sleep quality. Interestingly, most had a positive self-image but 26.9 percent had negative effect on body image or self-esteem, harbingers for support. The results suggest a high level of satisfaction, with 50.6 per cent of participants being very satisfied with their quality of lifefollowing the operation.

Table (4): participants' quality of life post laparoscopic cholecystectomy (n=409).

Parameter		***No.***	***Percent (%)***
Rate your overall physicalwell-being:	Excellent	201	49.1
	Good	139	34.0
	Fair	46	11.2
	Poor	23	5.6
Improvements in digestion and appetite?	No	97	23.7
	Yes	312	76.3
Satisfaction with ability to engage in physical activities?	Very Satisfied	122	29.8
	Satisfied	172	42.1
	Neutral	70	17.1
	Dissatisfied	32	7.8
	Very Dissatisfied	13	3.2
Rate your mental and emotional well-being:	Excellent	207	50.6
	Good	137	33.5
	Fair	43	10.5
	Poor	22	5.4
Any changes in sleep patterns or quality?	No	224	54.8
	Yes	185	45.2
Satisfaction with energy levels and vitality?	Very Satisfied	133	32.5
	Satisfied	171	41.8
	Neutral	68	16.6
	Dissatisfied	27	6.6

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	Very Dissatisfied	10	2.4
Did the procedure improve daily activities and tasks?	Yes, significantly	128	31.3
	Yes, moderately	166	40.6
	Yes, slightly	58	14.2
	No Change	45	11.0
	Decline	12	2.9
Rate your social interactions and relationships:	Excellent	153	37.4
	Good	111	27.1
	Fair	131	32.0
	Poor	14	3.4
Negative effects on body image or self-esteem?	No	299	73.1
	Yes	110	26.9
Overall satisfaction with quality of life after the procedure?	Very Satisfied	207	50.6
	Satisfied	137	33.5
	Neutral	47	11.5
	Dissatisfied	8	2.0
	Very Dissatisfied	10	2.4

Table 5 makes observations about which types of food patients experience symptoms and which do not after laparoscopic cholecystectomy. In summary, almost half of the patients (55.5%) confirmed that limitations based in part on dietary management had, in fact, caused a change in symptoms, leading to the conclusion that Nutritional management has a major role in recovery. Ofnote, there is correlation between selected food types and the appearance of manifest symptoms according to a substantial part of respondents (59.4 %), which is significant for dietary choices inrehabilitation after the operation. Significant rates of symptom reporting were seen from processedmeat and full fat dairy products, respectively 58.1% and 64.5%. On the other hand, less disease- causing food items like certain fruits showed lower correlation rates, which implies patients may tolerate those better after cholecystectomy.

Table (5): Symptoms seen in patients by food type post laparoscopic cholecystectomy (n=409).

Parameter		***No.***	***Percent (%)***
Do symptoms change after the first nutrition following laparoscopic cholecystectomy and after feeding in the third month?	No	182	44.5
	Yes	227	55.5
Did you see symptoms according to food type?	No	166	40.6
	Yes	243	59.4
Meat, Egg, Fatty Seeds* (n=222)	Nuts, peanuts	69	31.1
	coffee	118	53.2

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	Meat processed meats	129	58.1
	Egg	78	35.1
Milk And Milk Products* (n=203)	Full fat yogurt	131	64.5
	Full fat milk	123	60.6
	Full fat cheese	94	46.3
fruits and vegetables * (n=152)	Tomatoes	53	34.9
	Peas	50	32.9
	Onion	66	43.4
	Corn	60	39.5
	Apple	28	18.4
	Orange	54	35.5
Oil and sugar* (n=223)	Pure oils	117	52.5
	Butter	170	76.2
	Pudding	71	31.8
	Margarine	39	17.5
	Biscuits	42	18.8
	Ice cream	57	25.6
	Custard pie	40	17.9
	Cake snacks	57	25.6
	Fried food	216	96.9
Sauces * (n=187)	Mayonnaise	144	77.0
	Other sauces	111	59.4
Spices* (n=220)	Spices	206	93.6
	Stew	59	26.8

****Results may overlap***

Table (6) shows that Improvement in quality of life has statistically significant relation to gender (P value=0.002) and occupational status (P value=0.002). It also shows statistically insignificant relation to age, marital status, educational level, and region of residence.

Table (6): Relation between improvement in quality of life and sociodemographic characteristics.

Parameters		***Improvement in quality of life***		***Total (N=409)***	***P value****
		Significant or moderate	**Slight or no**		
Gender	Female	257	52	309	0.002

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		78.8%	62.7%	75.6%	
	Male	69	31	100	
		21.2%	37.3%	24.4%	
Age	25 years or less	86	23	109	0.686
		26.4%	27.7%	26.7%	
	26 to 35	79	17	96	
		24.2%	20.5%	23.5%	
	36 to 45	84	26	110	
		25.8%	31.3%	26.9%	
	More than 45	77	17	94	
		23.6%	20.5%	23.0%	
Marital status	Single	108	28	136	0.805
		33.1%	33.7%	33.3%	
	Married	197	50	247	
		60.4%	60.2%	60.4%	
	Divorced	17	3	20	
		5.2%	3.6%	4.9%	
	Widowed	4	2	6	
		1.2%	2.4%	1.5%	
Residence of region	Northern region	26	12	38	0.075
		8.0%	14.5%	9.3%	
	Southern region	39	3	42	
		12.0%	3.6%	10.3%	
	Central region	95	27	122	
		29.1%	32.5%	29.8%	
	Eastern region	69	14	83	
		21.2%	16.9%	20.3%	
	Western region	97	27	124	
		29.8%	32.5%	30.3%	
Educational level	Primary school	10	2	12	0.774
		3.1%	2.4%	2.9%	
	Intermediate school	5	3	8	
		1.5%	3.6%	2.0%	
	Secondary school	62	16	78	
		19.0%	19.3%	19.1%	
	Diploma	43	10	53	
		13.2%	12.0%	13.0%	
	Bachelor's degree	166	38	204	

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		50.9%	45.8%	49.9%	
	Postgraduate degree	23	9	32	
		7.1%	10.8%	7.8%	
	No academic qualification	17	5	22	
		5.2%	6.0%	5.4%	
Occupational status	Student	70	15	85	0.002
		21.5%	18.1%	20.8%	
	Employed	99	34	133	
		30.4%	41.0%	32.5%	
	Freelancer	5	7	12	
		1.5%	8.4%	2.9%	
	Non-Employed	130	25	155	
		39.9%	30.1%	37.9%	
	Retired	22	2	24	
		6.7%	2.4%	5.9%	

P value was considered significant if ≤ 0.05.

Table (7) shows that Improvement in digestion and appetite has statistically significant relation to region of residence (P value=0.001). It also shows statistically insignificant relation to gender, age, marital status, educational level, and occupational status.

Table (7): Relation between improvement in quality of life and sociodemographic characteristics.

Parameters		***Improvements in digestion and appetite?***		***Total (N=409)***	***P value****
		No	**Yes**		
Gender	Female	68	241	309	0.153
		70.1%	77.2%	75.6%	
	Male	29	71	100	
		29.9%	22.8%	24.4%	
Age	25 years or less	28	81	109	0.694
		28.9%	26.0%	26.7%	
	26 to 35	24	72	96	
		24.7%	23.1%	23.5%	
	36 to 45	27	83	110	
		27.8%	26.6%	26.9%	
	More than 45	18	76	94	
		18.6%	24.4%	23.0%	
Marital status	Single	33	103	136	0.975

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		34.0%	33.0%	33.3%	
	Married	58	189	247	
		59.8%	60.6%	60.4%	
	Divorced	5	15	20	
		5.2%	4.8%	4.9%	
	Widowed	1	5	6	
		1.0%	1.6%	1.5%	
Residence of region	Northern region	17	21	38	0.001
		17.5%	6.7%	9.3%	
	Southern region	3	39	42	
		3.1%	12.5%	10.3%	
	Central region	26	96	122	
		26.8%	30.8%	29.8%	
	Eastern region	16	67	83	
		16.5%	21.5%	20.3%	
	Western region	35	89	124	
		36.1%	28.5%	30.3%	
Educational level	Primary school	4	8	12	0.110
		4.1%	2.6%	2.9%	
	Intermediate school	4	4	8	
		4.1%	1.3%	2.0%	
	Secondary school	10	68	78	
		10.3%	21.8%	19.1%	
	Diploma	16	37	53	
		16.5%	11.9%	13.0%	
	Bachelor's degree	49	155	204	
		50.5%	49.7%	49.9%	
	Postgraduate degree	9	23	32	
		9.3%	7.4%	7.8%	
	No academic qualification	5	17	22	
		5.2%	5.4%	5.4%	
Occupational status	Student	19	66	85	0.652
		19.6%	21.2%	20.8%	
	Employed	36	97	133	
		37.1%	31.1%	32.5%	
	Freelancer	4	8	12	
		4.1%	2.6%	2.9%	
	Non-Employed	34	121	155	

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		35.1%	38.8%	37.9%	
	Retired	4	20	24	
		4.1%	6.4%	5.9%	

P value was considered significant if ≤ 0.05.

Discussion:

One of the most frequently performed interventions worldwide is cholecystectomy, which, however, is gradually increasing in developed countries. The relatively small differences between countries in the number of cholecystectomies cannot be attributed to the frequency of a gallbladder illness. In evaluating response to any medical or surgical management for any disease there is increasing interest in self-reported outcomes such as HRQoL. For evaluation of necessity of intervention, increasing numbers of research are being performed to evaluate the HRQoL in gastrointestinal medicine and surgery. The present study aimed to assess the quality of life (QoL) following laparoscopic cholecystectomy in Saudi Arabia, with a particular focus onthe implications of dietary management, specifically the adherence to a low-fat diet.

The overall patient satisfaction index of patients who underwent laparoscopic cholecystectomy in the current study was significantly high with; Very satisfied; 40.4%atisfied; 36.4%. Physical wellbeing is generallly positively rated with 49.1 % of participants rating their physical health as excellent, and that 76.3 % report improvements in digestion and appetite, is consistent with what is expected after gallbladder removal. This release of gallbladder related symptoms like biliary colic, may be favourable toward the patients quality of life from an improvement in their digestive health. Although unreported, the changes in sleep quality capture a dimension of recovery that needs to be better understood. Poor sleep quality can have a series of effects on emotional health, cognitive function, and overall recovery, and also should be watched closely in postoperative care protocols.These findings are in accordance with earlier publications; all of them underlined improvement in the QoL after laparoscopic cholecystectomy. A similar study done in Pakistan also established increased scores in the Health-Related Quality of Life Index (GIQLI) after laparoscopic cholecystectomy. As in detail, participants' GIQLI average pretreatment was 94.64 ± 2.24, with a posttreatment value of 106.09 ± 2.40, making it possible torecord a mean change of 11.44 ± 3.29 ($p = 0.001$). This observation corresponds with another study that shown analogous pre and post L.A QoL scores of 96± 20.2 and 108 ± 16.8respectively[25]. Our results are also supported further by the research of Mosimann, who completed the Short Form Health Survey (SF-36) along with the GIQLI to assess health-related quality of life (HRQoL) in patients with various cholelithiasis. Patients were categorized in this study according to diagnostic criteria and surgical risk and improvements were found for patients with symptomatic gallstones whose surgical risk was low, but with no improvements seen for those with high surgical risk and without symptomatology. [26] However, in the opposite vein, Kitano et al. reported that the GIQLI ratings in both symptomatic and asymptomatic groups were significantly increased following laparoscopic cholecystectomy. Nevertheless, they found that symptomatic patients improved more deeply, and especially those with lower baseline GIQLI ratings, which implies that the surgery is most beneficial in this group [27]. In addition, study from Taiwan supported our findings by showing that patients with symptomatic

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enterolithiasis presented lower SF-36 scores before surgery and demonstrated significant increases in GIQLI score after surgery [28]. Taken together with this collective body of evidence, this assertion remains true: laparoscopic cholecystectomy is effective intervention for symptomatic gallstonesin which the quality of life and patient satisfaction are both improved. However, there is a high level of complications and adverse effect reported by a large percent of the participating participants, which indicates that surgical recovery is very complex. Our study found that the majority were satisfied, but does not avert the balance of acknowledgement that complications require a discussion of the variability of the recovery experience. Unlike previous studies which have also noted high satisfaction rates, complications still had an adverse effect on the perceivedQoL post Surgery. This suggests that there is a need for better preoperative counseling such thatpatients going forward are properly prepared for what can occur after the procedure.

Professionalism and competence of healthcare team is quite determinative to patient satisfaction. Reflection of 72.8% of subjects rating their care as excellent, relates to the potential impact on post operative recovery of a skilled courteous health care team. To achieve effective postoperative care by creating all the postoperative care and experience and satisfaction experience, an effective healthcare team should be built to create trust and reassurance for patients. It is also important to have been reported the importance of pain management as of the key determinants of satisfaction for 88.8% of the respondents (hence some of healthcare providers should consider pain control strategies and possibly improve patient experience as wellas their long – term health outcomes).

This study identified the substantial influence of nutritional management on postoperative recovery as a major finding. Results showed that 55.5% of patients endorsed dietary restriction as a factor contributing to symptoms change after laparoscopic cholecystectomy, demonstrating that dietary changes following laparoscopic cholecystectomy are not only beneficial, but necessary for optimal recovery. In correlation with the consumption of processed meats and full fat dairy, symptom exacerbation is found, suggesting the need for patient education on post surgery dietary selections. There is previous research backing current diet's effect on GI recover,and in the Saudi context, making the diet low fat would likely make the experience of recoveringoverall much better.

In addition, determinants of recovery process such as QoL improvements, gender, and occupational status suggest that demographic factors strongly affect the recovery. Better postoperative experience with better postoperative support and dietary recommendations tailoredto specific demographic groups is expected from having better specific demographic groups needs for the needs in postoperative care and diet.

Conclusion:

Although satisfaction rates are very high, attention should also be paid for taking account of the complications and adverse effects reported by participants. Longitudinal QoL outcomes from this surgical cohort along with diverse demographic and regional variables in identification of determining recovery factors need to be studied to improve patient care. Education is needed for better outcomes and better healthcare experience in this population, especially about dietary management post-surgery.

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Ethical approval

An informed consent was obtained from each participant after explaining the study in full and clarifying that participation is voluntary. Data collected were securely saved and used for research purposes only.

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Conflict of interests

The authors declare no conflict of interest.

Informed consent:

Written informed consent was acquired from each individual study participant.

Data and materials availability

All data associated with this study are present in the paper.

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