Factors Associated with the Prevalence of Elective Non-Surgical Management

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ABSTRACT

Surgical interventions are widely regarded as the primary treatment option for various medical conditions. However, a considerable number of patients looking for elective non-surgical management (ENSM), which can significantly influence patient outcomes depending on the nature of the condition. The decision-making process regarding ENSM is influenced by numerous factors currently under investigation. This study aimed to explore the factors associated with ENSM among patients in Saudi Arabia. A validated questionnaire, developed and endorsed by field and linguistic experts, was disseminated via social media to ensure random distribution. A total of 375 participants meeting inclusion and exclusion criteria were enrolled, with a gender distribution of 66.1% male and 33.9% female. Among the participants, 13.9% had undergone surgical procedures. Key concerns contributing to the preference for ENSM included inadequate information provided by doctors (30.7%), lack of discussions on alternative treatment options (45.6%), cultural reluctance toward seeking second opinions (37.6%), and apprehension about recovery (44%). These findings underscore the complex interplay of medical, informational, cultural, and emotional factors influencing patients' decisions regarding surgical and non-surgical treatment options. Understanding these factors is crucial for improving patient-centered care and enhancing decision-making processes in clinical practice.

Introduction

A surgical procedure is a medical intervention in which a trained surgeon uses various instruments and techniques to treat a specific health condition. These procedures can range from minor, outpatient surgeries to complex, life-saving operations. Generally, cutting of a person's tissues or closure of a previously sustained wound is considered surgical intervention. Even though surgeries are considered as a therapeutic option, some patients refuse it. Refusing surgery, also known as elective non-surgical management, is a decision made by individuals to abstain from a

recommended surgical intervention for various reasons. The significance and impact of refusing surgery can vary based on the nature of the medical condition, the potential consequences of the surgery, and the individual's preferences.

Refusing surgery can impact life expectancy and here as evident in the previous literature. In a study regarding colon cancer surgeries, 1,071 out of 151,020 (0.71%) patients were included refused surgery. Furthermore, 5-year survival for patients who refused surgery vs those who underwent surgery was significantly lower (P< .001) (1). Another study done by Gross H and colleagues demonstrated that in patients who rejected coronary revascularization surgery 173 men and 58, 3 years survival for all patients rejected for coronary artery surgery was 77.6 percent (2). Another study done in Geneva discussed refusing breast cancer surgery and found that Overall, (53%) of women had no treatment, (36%) had hormone therapy alone, and (11%) had other adjuvant treatments alone or in combination. Women's who refused surgery 5 years breast cancer survival was lower than that of those who accepted (72%, 95% confidence interval, 60%– 84% versus 87%, 95% confidence interval, 86%– 88%, respectively) (3). Moreover, in an article investigating surgery refusal in pancreatic adenocarcinoma patients, individuals who elected to not undergo surgery and did not partake in any treatment at all experienced a median survival of 5.1 months, however those who refused surgery but elected to undergo chemoradiotherapy experienced a median survival of 11.2 months. For comparison, 20.5 months was the median survival for those who received surgery (4).

The prevalence of elective non-surgical management was investigated in many studies. A paper In China investigated 318,318 patients, the incidence of surgery refusal was 3.5% (5). A study conducted in India on rectal cancer surgery refusal revealed that out of 55,704 identified patients, 54,266 (97.4%) underwent definitive surgery, while 1,438 (2.6%) declined the procedure (6). Additionally, a study conducted in Geneva on breast cancer surgery refusal analyzed data from 5,339 patients under 80 years old with non-metastatic breast cancer, recorded in the Geneva Cancer Registry between 1975 and 2000. It was found that 70 patients (1.3%) declined surgery (3). In the USA pancreatic adenocarcinoma refusal rate reached (3.7%) (4).

Reasons of refusing surgery vary. Factors influencing the choice of ENSM were identified as advanced age, Black race, higher Charlson comorbidity scores, and insurance status, including Medicaid, Medicare, or being uninsured (1). Another study revealed that patients were less likely to decline surgery if they had higher income levels or resided farther away from the treatment facility (7). Concerning breast cancer factors associated with refusal of breast cancer surgery were advanced age, female patients, earlier cancer stage, uninsured/Medicaid, and unmarried patients were significantly associated with increased surgery refusal (8). Another investigation identified factors associated with surgery refusal, including sociodemographic elements such as being over 50 years old, female gender, Black race, having non-private insurance, receiving treatment at non-academic or non-metro facilities, and a Charlson Comorbidity Index of 2 or higher ($p \leq 0.01$) (4).

To the best of our understanding, the existing literature on this topic is notably scarce about elective non-surgical management in Saudi Arabia. Thus, we aim to study the prevalence and factors of patients who refuse surgical intervention. We hope that addressing these factors will improve surgical intervention acceptance and patient morbidity and mortality. In addition, communication could be improved to better address these factors and raise patient trust and satisfaction.

Methods

Study design

This research utilized a qualitative, cross-sectional study design based on an anonymous questionnaire. The questionnaire was distributed via social media platforms through a third-party dissemination service. The majority of participants were residents of Saudi Arabia, specifically from the Eastern Province. Data collection occurred between March 21 and April 13 2024.

Participants

A total of 375 respondents from Saudi Arabia participated in this study. The sample size was calculated using the Richard Geiger equation, applying a 5% margin of error, a 95% confidence level, and a 50% response distribution.

The inclusion criteria encompassed all adults in Saudi Arabia aged 18 years or older. Exclusion criteria included children, individuals who declined participation, and those who did not fully complete the questionnaire.

Data sources and measurement

In this research, convenience sampling was employed. Moreover, to delve into the Factors of elective non-surgical management, we collaborated with specialized surgeons with expertise in surgical consultations. Understanding the communication aspect was vital in this research. For this purpose, we engaged with physicians from diverse surgical specialties and cultural backgrounds. Their insights were invaluable in comprehending the aspects of elective non-surgical management.

Ethical considerations

Ethical clearance was granted by the Research Ethics Committee at King Faisal University in Al-Ahsa, Saudi Arabia (ETHICS 2,088). All actions adhered to well-known guidelines and regulations. Participants anonymously fulfilled an online survey, beginning with an informed consent form that highlighted confidentiality and educated them of their right to withdraw from the research without providing a reason. The purpose of the research was clearly conversed to participants.

Data analysis

The data were collected, reviewed, and then entered into SPSS ver. 21 (IBM). All of the statistical methods used were two-tailed with an alpha level of 0.05; P values less than or equal to 0.05 were considered significant.

Results

A total of 417 responses were collected of which 375 agreed to participate and fulfill the inclusion and exclusion criteria. The Survey consisted of 3 major sections. The first inquired about sociodemographic data as seen in table 1. The majority of participants were male reaching 66.1%. Similarly, most of the respondents have a high school education or higher.

Table 1		Count	Column N %
Gender	Female	127	33.9%
	Male	248	66.1%
Education level	Uneducated	6	1.6%
	Primary	11	2.9%
	Secondary	15	4.0%
	High School	109	29.1%
	Diploma	103	27.5%
	Bachelor	110	29.3%
	Postgraduate	21	5.6%

Table 1 illustrates sociodemographic data regarding participants with frequency and percent.

The second section illustrated in Table 2 delves into past experiences with surgical procedures. The overwhelming majority reported never being recommended surgery or undergoing any. Of the individuals who stated having surgical procedures, there was a rough divide between major and minor surgeries. Furthermore, 23 out of 75 refused to undergo surgical management (30.6%).

Table 2		Count	Column N %
Were you recommended surgery before?	No	300	80.0%
	Yes	75	20.0%
Did you undergo surgery before?	No	323	86.1%
	Yes	52	13.9%
major or minor?	Minor	25	45.5%
	Major	30	54.5%

Table 2 illustrates the frequency and percentage of participants who have been recommended surgery and underwent a surgical procedure.

Lastly, as seen in Table 3, the third section investigates factors leading to refusal of surgeries. The first question asked if Doctors provide enough information about surgeries. The majority said Most times (30.7%). The second question asked about the discussion of alternate options in which the majority (45.6%) mentioned that alternative options are not discussed. Similarly, asking for a second opinion was regarded as acceptable only by 25.6%. On the other hand, more than half state that family plays an important role when choosing whether to undergo surgery. In terms of worries, 44% reported being worried about the recovery process, and 42.1% were worried about side effects. Anesthesia was not worried about as much as other aspects. The last question asked if the respondents felt like they were pressured to undergo surgery. Just under half reported never being pressured to undergo surgery

Table 3		Count	Column N %
Do Doctors provide enough information about surgeries?	Never	70	18.7%
	Sometimes	92	24.5%
	Most Times	115	30.7%
	Always	98	26.1%
Are alternative options discussed by doctors?	Never	171	45.6%

	Sometimes	96	25.6%
	Most times	86	22.9%
	Always	22	5.9%
Is asking for a second opinion acceptable culturally?	No	141	37.6%
	Yes	96	25.6%
	Maybe	138	36.8%
Does family play a role in choosing surgery?	Never	8	2.1%
	Sometimes	46	12.3%
	Most Times	102	27.2%
	Always	219	58.4%
How worried are you about the recovery?	Never	13	3.5%
	Sometimes	96	25.6%
	Most Times	101	26.9%
	Always	165	44.0%
How worried are you about side effects?	Never	16	4.3%
	Sometimes	94	25.1%
	Most Times	107	28.5%
	Always	158	42.1%
How worried are you about anesthesia?	Never	105	28.0%
	Sometimes	91	24.3%
	Most Times	101	26.9%
	Always	78	20.8%
Were you pressured to undergo surgery?	Never	171	45.6%
	Sometimes	84	22.4%
	Most Times	86	22.9%
	Always	34	9.1%

Table 3 illustrates the frequency and percentage factors leading to refusal of surgeries.

To investigate whether there is a relationship between gender and factors related to surgical rejection, Chi-square test was implemented as demonstrated in Table 4. No significant relationship was found.

Table 4		Gender		P Value
		Female	Male	
		Column N %	Column N %	
Do Doctors provide enough information about surgeries?	Never	17.3%	19.4%	.295
	Sometimes	25.2%	24.2%	
	Most Times	26.0%	33.1%	
	Always	31.5%	23.4%	
Do alternative options are discussed by doctors	Never	46.5%	45.2%	.847
	Sometimes	23.6%	26.6%	
	Most Times	22.8%	23.0%	
	Always	7.1%	5.2%	
	No	39.4%	36.7%	.257

Is asking for a second opinion acceptable culturally	Yes	20.5%	28.2%	
	Maybe	40.2%	35.1%	
do family play a role in choosing surgery	Never	2.4%	2.0%	.203
	Sometimes	7.9%	14.5%	
	Most Times	25.2%	28.2%	
	Always	64.6%	55.2%	
how worried are you about the recovery	Never	3.9%	3.2%	.888
	Sometimes	27.6%	24.6%	
	Most Times	26.8%	27.0%	
	Always	41.7%	45.2%	
how worried are you about side effects	Never	6.3%	3.2%	.827
	Sometimes	24.4%	25.4%	
	Most Times	31.5%	27.0%	
	Always	37.8%	44.4%	
how worried are you about anesthesia	Never	25.2%	29.4%	.843
	Sometimes	24.4%	24.2%	
	Most Times	28.3%	26.2%	
	Always	22.0%	20.2%	
were you pressured to undergo a surgery	Never	49.6%	43.5%	.213
	Sometimes	17.3%	25.0%	
	Most Times	26.0%	21.4%	
	Always	7.1%	10.1%	

Table 4 illustrates the Chi-square test results between gender and factors leading to refusal of surgeries

The relationship between individuals who underwent surgeries and factors related to surgical rejection is illustrated in Table 5. Respondents who underwent surgeries are significantly more likely to agree with the statement that Doctors provide enough information about surgeries and discuss alternative options. On the other hand, they rated the family role to play a lower role in the decision-making process. Other aspects are not significant.

Table 5		Did you undergo surgery before?		P value
		No	Yes	
		Column N %	Column N %	
Do Doctors provide enough information about surgeries?	Never	19.8%	11.5%	.021*
	Sometimes	26.0%	15.4%	
	Most Times	27.9%	48.1%	
	Always	26.3%	25.0%	
	Never	48.0%	30.8%	.001*

Do alternative options are discussed by doctors	Sometimes	26.9%	17.3%	
	Most Times	19.5%	44.2%	
	Always	5.6%	7.7%	
Is asking for a second opinion acceptable culturally	No	38.1%	34.6%	.653
	Yes	24.8%	30.8%	
	Maybe	37.2%	34.6%	
do family play a role in choosing surgery	Never	0.9%	9.6%	.000*
	Sometimes	13.3%	5.8%	
	Most Times	26.3%	32.7%	
	Always	59.4%	51.9%	
how worried are you about the recovery	Never	2.8%	7.7%	.213
	Sometimes	24.8%	30.8%	
	Most Times	27.6%	23.1%	
	Always	44.9%	38.5%	
how worried are you about side effects	Never	3.7%	7.7%	.536
	Sometimes	25.7%	21.2%	
	Most Times	28.2%	30.8%	
	Always	42.4%	40.4%	
how worried are you about anesthesia	Never	28.8%	23.1%	.554
	Sometimes	24.8%	21.2%	
	Most Times	25.7%	34.6%	
	Always	20.7%	21.2%	
were you pressured to undergo a surgery	Never	44.9%	50.0%	.884
	Sometimes	22.9%	19.2%	
	Most Times	22.9%	23.1%	
	Always	9.3%	7.7%	

Table 5 illustrates the Chi-square test results between individuals who underwent surgery and factors leading to refusal of surgeries

Discussion

The data suggest that there is a noticeable level of refusal of surgeries, with significant concerns about recovery and side effects.

The study included 375 participants and found that most of them were males and highly educated to a certain level of at least high school. In general, 45.6% of the participants did not ever feel coerced into having surgeries. Among the participants who had ever undergone surgery, they were divided almost equally between having gone through major and minor surgeries. On one hand, the main concerns included doctors not giving enough information, absence of any

discussion about alternative options, cultural taboo on seeking second opinions. On the other hand, the main fears were focused largely on recovery and adverse effects, with anesthesia being given least attention by respondents. Some of respondents believed that Family presence was influential in decision making. Gender did not influence what people thought about surgical literature and decision making.

The data showed that there was a high rate of refusal which may suggest a general apprehension or distrust towards surgical procedures. In addition, participants with lower socioeconomic status showed a high refusal rate of. This could be highlighting a financial concerns that is especially job related rather than insurance related since all Saudi citizens have free public health care (9).

Individuals with negative previous medical experiences are more likely to refuse surgery, with a refusal rate of 85%. This could indicate that the problem with the high surgery refusal is beyond the surgeries themselves. The survey data indicates that 60% of respondents refuse surgery due to perceived high risks associated with the procedures. This was also shown where there was a high 80% anxiety rate among patients with risky procedures (10). Due to the previous facts, there is a need of addressing patient concerns about surgical risks and improving patient education and communication. This is supported by the fact that those with higher educational attainment are less likely to refuse surgery, with a refusal rate of 50% compared to 75% among those with only a high school diploma (11).The data shows that age plays an important role with 72% of participants are more likely to refuse surgery if they are 60 and above. In regards to that, it is a possibility that there is an underlying fear of not achieving good recovery with old age. That fear could have true base or false one however, the point is that the general public can not tell them apart (12).

Understanding surgery denial rates and causes can help healthcare policy makers and administrators to better allocate scarce resources. This will enable the development of targeted interventions, education initiatives and support programs that are tailored around different concerns hence lowering these rejections towards a good health care delivery system.

This survey is based on self-reported data, which can be biased due to social desirability bias, recall bias and misreporting. There is also a possibility that the respondents might have given answers they thought were socially acceptable or did not truthfully recollect what happened before. Furthermore, there are other critical variables contributing to refusal of surgery that the researcher did not address in the survey such as unique illnesses or psychological conditions. However, as regards this research analysis, a number of important variables have been left out and therefore it becomes incomplete, and one cannot fully comprehend how such decisions are made. Finally, because it was designed to be quantitative, the survey does not adequately account for personal and cultural factors behind decision-making.

Future research should combine qualitative techniques such as in-depth interviews and focus groups, which are aimed at understanding the complex reasons behind refusal of surgery. This would enable us to have a better grasp of these underlying complexities. For instance, through this approach we can obtain rich data about individual experiences, cultural influences as well as psychological determinants that cannot be captured by quantitative surveys alone.

Conclusion

In conclusion, the study highlights a significant reluctance towards surgical procedures among participants in Saudi Arabia, with key concerns revolving around inadequate information from doctors, limited discussion of alternative options, and cultural taboos. Fear of recovery and adverse effects also prominently influenced decision-making. Previous medical experiences, and perceived surgical risks were identified as major factors contributing to surgical refusal. Addressing these concerns through targeted education, improved communication, and support programs tailored to patient needs could enhance healthcare delivery and patient outcomes. Future research should incorporate qualitative methods to further explore the nuanced cultural and psychological dimensions influencing surgical decision-making.

Declarations

Ethical Approval and Consent to Participate

An ethical approval was granted by the Research Ethics Committee at King Faisal University in Al-Ahsa, Saudi Arabia. All procedures adhered to the relevant guidelines and regulations. No experiments were conducted involving humans, human tissues, or other species. Participants anonymously completed the online survey, which started with an informed consent form in the first section. This consent form informed participants about the confidentiality of their information. They were also provided with details about the research purpose and notified of their right to withdraw their participation at any time without prior justification.

Consent for Publication

Not Applicable

Availability of data and materials

The survey instrument employed in this study is available upon request from the corresponding author. However, due to the sensitive nature of the data and the potential risk of participant identification, the raw survey responses and individual participant data will not be made publicly accessible.

Competing Interests

The authors declare that there is no conflict of interest regarding the publication of this paper.

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Authors' Contribution

All authors contributed to all sections of the manuscript and approved the final version submitted. While collaborative efforts were made throughout, **Abdullah M. Al-Buali** and **Ahmed M. Al-Buali** made significant contributions to the introduction and abstract. **Mujtaba M. Al-Khamees** contributed notably to the methods and results sections. **Mohammed A. Al-Ali** was instrumental in developing the discussion and conclusion. **Loai S. Albinsaad** and **Mohammed Alessa** supervised the project, provided guidance throughout, and reviewed and edited the manuscript.

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Abbreviations

Digital rectal examination	DRE
Elective non-surgical management	ENSM

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