QUESTIONNAIRE BASED ANALYTICAL TOOL ON UTERINE FIBROIDS

A MINI PROJECT II REPORT

Submitted by

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in partial fulfillment for the award of the

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in

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BONAFIDE CERTIFICATE

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

MINI PROJECT II – APRIL 2023

This is to certify that the project entitled

QUESTIONNAIRE BASED ANALYTICAL TOOL ON UTERINE FIBROIDS

is the bonafide record of Mini Project II done by

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of B.E. Computer Science and Engineering during the year 2022-2023.
who carried out the Mini Project II under my supervision, certified further that to the best of my knowledge the work reported herein does not form part of any other thesis or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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Internal Examiner	**External Examiner**

DECLARATION

We affirm that the Mini Project II titled **"QUESTIONNAIRE BASED ANALYTICAL TOOL ON UTERINE FIBROIDS"** being submitted in partial fulfillment for the award of Bachelor of Engineering is the original work carried out by us. It has not formed the part of any other project work submitted for award of any degree or diploma, either in this or any other University.

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I certify that the declaration made above by the candidates is true.

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ABSTRACT

A number of non-invasive alternatives to hysterectomy are available for treating uterine fibroids, but they may not effectively relieve all symptoms. As a result, it is now more crucial than ever to evaluate the effectiveness of these alternative therapies in easing the symptoms of uterine fibroid using patient-reported outcomes. These signs and symptoms can include dysmenorrhea, heavy menstrual bleeding, and bulk symptoms. The Uterine Fibroid Symptom and Analysis of Patient Recovery questionnaire (UFS- APR) was created as a patient-reported outcome measure to standardize the evaluation of fibroid-related symptoms. The UFS APR is used to analyse both uterine fibroids-positive and -negative women. Our study's objective was to translate and validate the UFS-APR in India with a view to assessing its validity, responsiveness, and reliability in evaluating the treatment of uterine fibroids. Both clinically necessary data and information from a self-administered web-based questionnaire were gathered for the study. Women who felt pain during or after surgery were specifically questioned about their experiences. In the open-ended sections of the questionnaire, women could express their own words about their experiences. Premenopausal females between the ages of 30 and 50 who were able to speak and read English and were willing to give written informed consent were recruited for the study. The women in the healthy control group had regular menstrual cycles, a normal gynaecologic exam, and no history of uterine fibroids when they were enrolled. The study's primary goal was to assess the impact of uterine fibroid therapy on women's symptoms and quality of life. Patient-reported outcome measures, which are regarded as the most appropriate tools for measuring the impact and outcomes of interventions, were used to achieve this goal. The study also aimed to establish "normal" scores for patients who did not have fibroids, which could be used to compare the results of investigational therapies. Overall, the study sheds light on the experiences of women suffering from uterine fibroids, as well as the efficacy of various treatment options.

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1. INTRODUCTION

Uterine fibroids, is also known as uterine leiomyomata, are a typical type of noncancerous tumor that can develop in the female reproductive system. They are often found in up to 77% of hysterectomy specimens and are caused by the growth of monoclonal tumors for Serene muscle cells and fibroids in the myometrium. Fibroids that become symptomatic could result in menometrorrhagia, pelvic pain in pelvic, pressure, and could also cause infertility or poor pregnancy.

These symptoms can lead to disruption of work productivity, sleep, and social activities. As a result, patient- reported outcome measures, such as the Uterine Fibroid Symptom and Analysis of Patient Recovery questionnaire (UFS-APR), are the most appropriate tools for assessing the impact and outcomes of fibroid therapies. To participate in the study, women with fibroids had to be scheduled for hysterectomy, myomectomy, or uterine embolization and undergo a routine physical examination and imaging to confirm their diagnosis.

These women had regular menstrual cycles and a normal gynecologic examination at the time of enrolment. Women who were pregnant, physically challenged or mentally disturbed, had a life expectancy of less than a year, having any impairment that would affect in completion of the questionnaire, were not included in the study. Women who had leiomyomata were focused, and used to create the (UFS-APR) Uterine fibroid Symptom-Analysis of Patient Recovery.

The study anticipated to compare the outcomes of women having uterine fibroids and who underwent different therapies to the outcomes of normal controls. This comparison would help assess the effectiveness of the therapies in treating uterine fibroids.

By providing a standardized tool for evaluating fibroid-related symptoms, healthcare providers can ensure that patients receive the best possible care and treatment for their condition.The study's goal was to give insight into the course of fibroid-related symptoms in individuals who were found to be normal at the start.

The objectives of this study are:

A. To assess the impact of hysterectomy, myomectomy, and uterine fibroid embolisation on symptoms and health-related quality of life.

B. To compare the results of uterine fibroids in women before and after treatment.

C. The UFS-APR questionnaire to be validated in hysterectomy patients to determine a "normal" score for people without a uterus.

2. LITERATURE REVIEW

2.1 Literature Review on the Role of Uterine Fibroids in Endometrial Function.

2.1.1. Inference

The study showed that the uterine cavities of women with submucous fibroids were producing decreasing amount of substances favourable to early pregnancy development.

2.1.2 Authors

The Authors are as follows

Ikhena DE

Bulun SE.(May 2018)

2.2 Prevalence, symptoms and management of uterine fibroids

2.2.1 Inference

This article shows relevant results of the study for the indication uterine fibroids providing data on self-reported prevalence, symptomatology and management of uterine fibroids.

2.2.2 Authors

The Authors are as follows

Anne Zimmermann,

David Bernuit, (March 2020)

2.3 Uterine Fibroid Symptom and Quality of Life questionnaire (UFS-QOL NL) in the Dutch population

2.3.1 Inference

The results support the measurement properties of the Dutch UFS-QOL for assessing fibroid-related symptoms and health-related quality of life in Dutch women with uterine fibroids.

2.3.2 Authors

The Authors are as follows

Paul J M van Kesteren,

Helen S KokPublished(November 2021)

2.4 Uterine fibroid management: from the present to the future

2.4.1 Inference

This papers shows Symptomatic uterine fibroids require surgical and/or medical therapy according to the severity of symptoms, age, infertility, wish to preserve the uterus and FIGO classification.

2.4.2 Authors

The Authors are as follows

Jacques Donnez,

Marie-Madeleine Dolmans.(October 2016)

2.5 Epidemiology of uterine fibroid

2.5.1 Inference

This study is the first systematic review of the epidemiology of UFs. The objectives of this review are to comprehensively survey the epidemiological data on UFs to describe their incidence and prevalence, and to examine trends in the epidemiology of UFs according to region.

2.5.2 Authors

The Authors are as follows

CL Cookson

RA Gandolfo.(March 2017)

3. SYSTEM ANALYSIS

3.1. Existing System

Fibroids, which are noncancerous growths in the uterus, can have a significant impact on women's daily lives. Heavy bleeding, abdominal pain, urinary urgency and frequency, low back pain, and pain during intercourse are all symptoms that can disrupt work productivity, sleep, and social activities. A pre-existing questionnaire called the UFS-QOL was used to assess the impact of fibroids on quality of life. The existing questionnaire was based on health quality of life, and it assessed the patients' quality of life. A Cronbach's alpha ≥ 0.70 was considered to demonstrate the internal consistency of the existing "UFS-QOL" study. However, the study discovered low reliability in the UFS-QOL as a result of insufficient internal consistency, discriminant and concurrent validity. The UFS-QOL study could only distinguish between women with and without fibroids, demonstrating the significant impact that uterine fibroids and associated symptoms can have. However, it did not include other symptoms such as pain or bulkiness, nor did it consider the impact of fibroid symptoms on HRQL. Although the study demonstrated that the UFS-QOL was responsive to therapeutic change, its consistency was less accurate.

3.2. Proposed System

The study gathered information from clinical routines as well as a self-administered web-based questionnaire. Women who had surgery pain were asked detailed questions about their experiences during and after the procedure. Open-ended questions were also included in the questionnaire, allowing women to describe their experiences in their own words. The study enrolled premenopausal women aged 30 to 50 who were willing to provide written informed consent and could speak and read English. The study's primary goal was to assess the impact of uterine fibroid therapy on women's symptoms and health recovery. Patient-reported outcome measures, which are regarded as the most appropriate tools for measuring the impact and outcomes of interventions, were used to achieve this goal. Overall, the study sheds light on the experiences of women suffering from uterine fibroids, as well as the efficacy of various treatment options. Cronbach's Alpha, reflecting the scale's internal consistency, was high in the current study: α=0.93 (94% confidence interval 0.90–0.94). These included their overall satisfaction with the gynaecologists and the surgery, whether their expectations for the surgery were met, the change in symptoms and health-related quality of life, and the duration of their recovery after the surgery. The proposed system resulted in valid and reliable measure that can be utilized to assess and compare outcomes of uterine fibroid therapies. The study resulted in robust analysis of validity and reliability, and an analysis of the responsiveness of the UFS-APR to treatment**.**

4. SOFTWARE DESCRIPTION

4.1 NumPy:

NumPy is a Python library that is widely used for numerical and scientific computing. It provides support for multi-dimensional arrays and matrices, along with a large collection of mathematical functions to operate on them. Here are some of the main features of NumPy:

Multi-dimensional arrays: NumPy provides support for creating and manipulating multi-dimensional arrays and matrices, which are efficient for handling large amounts of numerical data. These arrays can be used to represent vectors, matrices, and tensors.

Mathematical functions: NumPy offers a broad range of mathematical functions, including basic arithmetic operations, trigonometric functions, exponential and logarithmic functions, and more. These functions can be applied to arrays and matrices, making it simple to perform element-wise operations.

Broadcasting: NumPy's broadcasting feature enables element-wise operations on arrays of various shapes and sizes. This eliminates the need for explicit loops and makes your code cleaner and more efficient.

Linear Algebra: NumPy provides support for linear algebra operations such as: B. Matrix multiplication, matrix inversion, and linear equation solving. These operations are commonly used in scientific and engineering applications.

Random number generation: NumPy provides support for generating random numbers from various distributions such as: B. Normal distribution, uniform distribution, exponential distribution. This is useful for simulating random events and generating test data.

Integration with other libraries: NumPy integrates well with other Python libraries such as SciPy, Pandas and Matplotlib, providing a comprehensive set of tools for data analysis and scientific computing.

NumPy is a powerful and efficient library for numerical and scientific computing in Python. Support for multidimensional arrays and mathematical functions, as well as integration with other libraries, make it an essential tool for data scientists and researchers.

4.2 Pandas:

Pandas is a Python library that provides high- performance, easy- to- use data structures and data analysis tools. It's particularly useful for handling exact data and time series data. now are some of the critical features of Pandas.

Data structures: Pandas provides two primary data structures Series and Data Frame. Series is a one- dimensional array-akin object that can hold any data type, while Data Frame is a two- dimensional table- alike structure with rows and columns.

Data eviscerating and cure: Pandas provides various tools for disemboweling and preparing data, similar as handling missing data, removing duplicates, and transubstantiating data.

Data manipulation :Pandas provides a wide range of tools for manipulating data, including filtering, sorting, grouping, aggregating, and incorporating data.

Data visualization Pandas integrates well with Matplotlib, a Python library for creating visualizations, to give easy- to- use conniving tools for creating maps, plots, and graphs.

Time series analysis: Pandas provides support for working with time series data, including date range generation, frequence conversion, etesting, and rolling window operations.

Integration with other libraries: Pandas integrates well with other Python libraries, similar as NumPy and Scikit- learn, to give a comprehensive set of tools for data analysis and machine literacy.

Pandas is a important and effective library for data analysis and manipulation in Python. Its easy- to- use data structures and tools for data cleaning, medication, and manipulation make it an essential tool for data scientists and judges. Its integration with other libraries, similar as Matplotlib and Scikit learn, makes it a protean tool for colorful data analysis and machine literacy tasks.

4.3 Matplotlib

Matplotlib is a Python library for creating visualizations, similar as maps, plots, and graphs, from data. It's extensively used for data analysis and scientific computing. Then are some of the crucial features of Matplotlib

Plotting functions: Matplotlib provides a wide range of plotting functions, including line plots, scatter plots, bar plots, histograms, and more. These functions are easy to use and can be customized with various formatting options, such as colors, labels, and markers.

Support for multiple output formats: Matplotlib can generate visualizations in various output formats, including PNG, PDF, SVG, and EPS. This makes it easy to generate high-quality visualizations for use in publications and presentations.

Integration with NumPy and Pandas: Matplotlib integrates well with NumPy and Pandas, making it easy to create visualizations from data stored in these libraries.

Support for customization: Matplotlib provides a wide range of customization options, such as axes limits, titles, legends, and annotations. These options allow users to create visualizations that effectively communicate their findings.

Object-oriented API: Matplotlib provides an object-oriented API that allows for more fine-grained control over the creation and manipulation of visualizations. This API is particularly useful for creating complex visualizations and animations.

Matplotlib is a powerful and flexible library for creating visualizations in Python. Its support for multiple output formats, integration with NumPy and Pandas, and customization options make it an essential tool for data analysis and scientific computing.

5. PROJECT DESCRIPTION:

5.1 Problem definition:

Uterine fibroids are the most common benign uterine tumor affecting approximately 70% of all women in the world. Hysterectomy has been the definitive treatment for fibroids and has been demonstrated to be effective in controlling symptoms. However, there have been few studies comparing the outcome of hysterectomy to other surgical and non-surgical therapies or to the outcomes experienced by a "normal" population, i.e. those not diagnosed with fibroids. Similarly, the relative effectiveness of myomectomy and uterine fibroid embolization has not been evaluated in the context of other fibroid therapies and minimally invasive variations. Fibroid symptoms experienced by patients are subjective and have not been shown to correlate with fibroid number, size, location, or any other clinical measure of fibroids. The change in symptoms and health-related quality of life in patients undergoing treatment for fibroids is not treated.

5.2 MODULE DESCRIPTION:

5.2.1 Module 1-

Collection of datasets:

One frequent variety of innocuous tumor is fibroids in the uterus. that develops in the uterus. Dataset collection related to uterine fibroids that include various data types and sources. Here are some data that collected medical records,

imaging data, Treatment data and Outcome data. Collecting and analyzing these types of data can help researchers and healthcare providers better understand the epidemiology and treatment of uterine fibroids, as well as identify potential risk factors and areas for improvement in clinical practice. However, it's important to ensure that any data collected is done so ethically and with the appropriate permissions and safeguards in place to protect patient privacy and confidentiality.

5.2.2 Module 2-

Analysis the dataset:

The data analysis aimed to determine the impact of the treatment received by patients on various aspects of their experience. These included their overall satisfaction with the gynaecologists and the surgery, whether their expectations for the surgery were met, the change in symptoms and health-related quality of life, and the duration of their recovery after the surgery. To achieve these goals, the researchers employed four multivariable linear regressions, controlling for potential confounding factors such as demographic information, medication, and surgery-related variables. The regressions were performed on the four dependent variables listed above. Additionally, the researchers analysed responses to open-ended questions from patients about their treatment using content analysis to provide counts of the most frequent responses.To perform the statistical analysis, the researchers used R 4.2.3. Descriptive statisticswere compared using Fisher's exact test or Welch's two-sample t-test. The multivariable regressions were conducted using base R. In summary, the data analysis aimed to estimate the potential impact of the treatment received by patients on various aspects of their experience and the researchers used a variety of statistical methods to achieve this goal**.**

5.2.3 Module 3 –

Descriptive statistics:

Of the 246 women invited to participate in the study, 96 launched the online survey and 21 completed the questionnaire. Of these 21 women,12 (67%) received drug treatment for fibroids and 9 (33%) underwent fibroid surgery (see Table 1). Women who received medication were more likely to recover from the

cause than surgery. In addition, about two-thirds of women (67.6%) recovered well by year 1–2, and the average age of women showed good recovery after hysterectomy. All of these variables were added as potential confounders in subsequent multivariate regressions. These descriptive statistics provide insight into the incidence, characteristics, and treatment options of uterine fibroids. However, it's important to note that every woman's experience with fibroids is unique, so it's important to discuss any concerns or symptoms with your healthcare provider.

5.2.4 Module 4 –

Analysis of regression:

Table 2 presents results from three models representing multivariable regression on menstruation, After surgery and medication. Based on the survey, the "better" treatment option or uterine fibroids is highly dependent on the individual patient's unique situation, including the size and location of the fibroids, the severity of symptoms, the patient's age and overall health, and the patient's desire for future fertility. The blood flow- cause heavy menstrual bleeding, which can lead to anemia if left untreated In some cases, surgery to remove the fibroids may be recommended to alleviate heavy bleeding and prevent anemia. Alternatively, medication or other non-surgical options may be recommended to help manage heavy bleeding and prevent anemia. And the urination and pelvic pain are mostly occurring during the fibroids grow near or press on the bladder or ureters (the tubes that carry urine from the kidneys to the bladder). In some cases, surgery to remove the fibroids may be recommended to alleviate the pressure on the bladder or ureters and relieve urinary symptoms. Alternatively, medication or other non-surgical options may be recommended to help manage urinary symptoms and pelvic pain. And the Getting sufficient sleep is mostly not satisfied with the patients those who are in need of surgery. Overall, the quality of life of patients Surgical and non-surgical treatment options can both be effective in improving symptoms and quality of life, but the surgical treatment did not show a statistically significant difference with regard to any of these three outcomes.

6. SYSTEM IMPLEMENTATION

6.1 Collection of Datasets:-

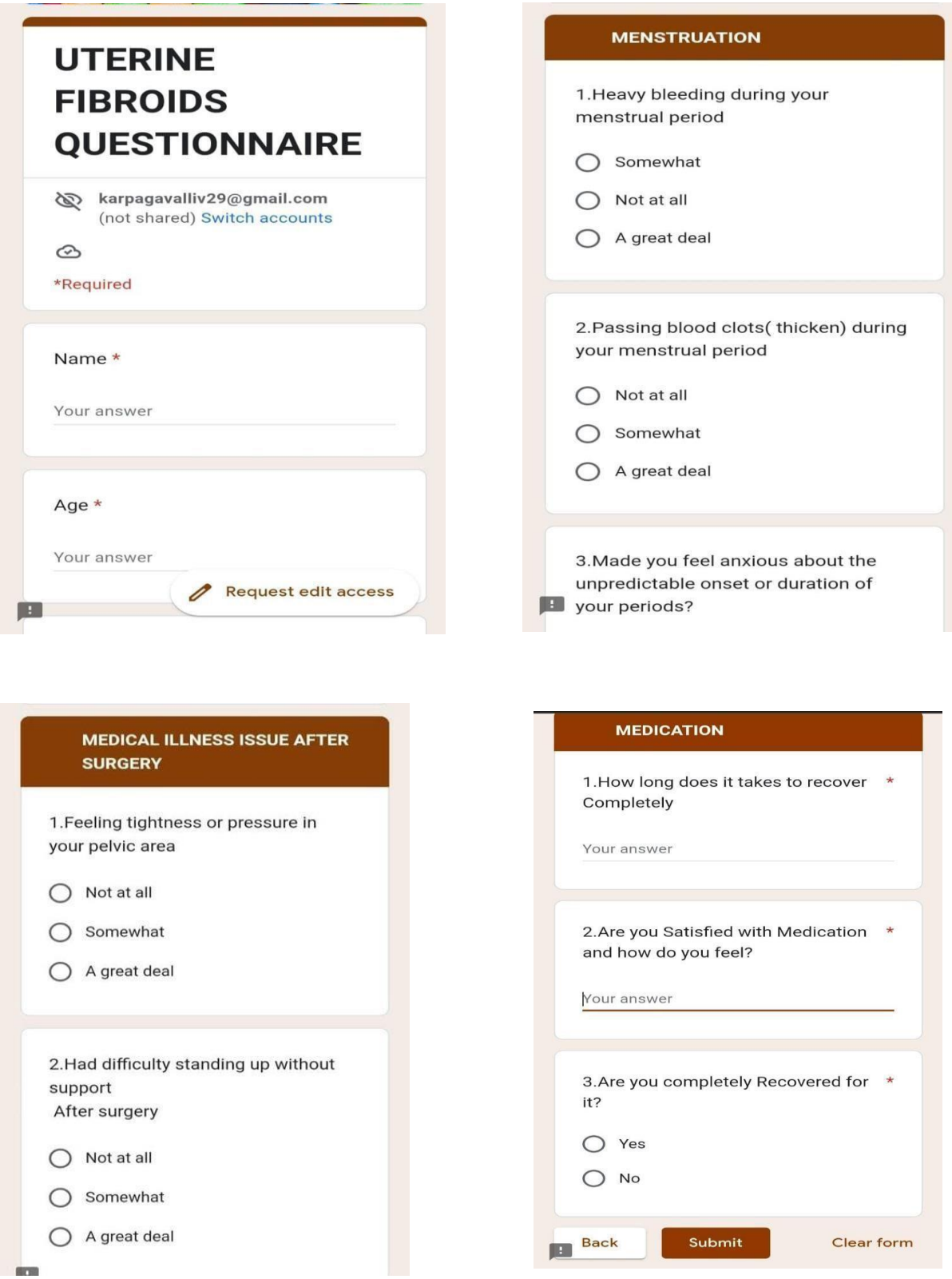

Figure 6.1.1 questionnaire on uterine fibroids

6.2 Fisher's exact test

Fisher's exact test is a statistical significance test used to determine if there is a significant association between two categorical variables. The implementation of Fisher's exact test in Python.

- Import the necessary libraries:

```
import pandas as pd
from scipy.stats import fisher_exact
```

- Load your data into a pandas DataFrame:

```
data = pd.read_csv("fibroids.csv")
```

- Explore the data to make sure it's in the right format:

```
print(data.head())
```

- Create a contingency table of the observed counts:

```
observed = [[data.loc[data['Treatment'] ==
'Placebo']['Improved'].sum(), data.loc[data['Treatment'] ==
'Placebo']['Not Improved'].sum()], [data.loc[data['Treatment'] ==
'Active']['Improved'].sum(), data.loc[data['Treatment'] ==
'Active']['Not Improved'].sum()]]
```

Here, fibroids.csv is the dataset that contains information about a clinical trial for uterine fibroids. The data has two columns, "Before Sugery" and "After Surgery", where "Treatment" is a categorical variable with two categories and "Improved" is also a categorical variable with two categories ("Improved" and "Not Improved"). The observed variable is a contingency table that shows the counts of the two categories in each variable for each treatment group.

❖ Calculate the p-value using fisher_exact:

odds_ratio, p_value = fisher_exact(observed)

❖ Print the results:

print("Odds ratio:", odds_ratio)

print("p-value:", p_value)

```
from scipy.stats import fisher_exact

# Create a contingency table
contingency_table = [[2, 6], [8, 5]]

# Perform Fisher's exact test
odds_ratio, p_value = fisher_exact(contingency_table)

# Print the results
print("Odds ratio:", odds_ratio)
print("p-value:", p_value)
```

```
Odds ratio: 0.20833333333333334
p-value: 0.18266253869969043
```

Figure 6.1.2 fisher exact test

6.2.1 TABLE 1: FISHER'S EXACT TEST

Demographics and selected surgery related variables of women with uterine fibroids (n=21)

	BEFORE SURGERY	**AFTER SURGERY**	**P***
	n=9	n=12	
Age(years)[a]	1(8)	6(5)	0.054
Nationality			
Indian	2(7)	5(6)	0.465
Civil Status			
Single[b]	4(5)	3(8)	0.476
Married	3(6)	4(7)	0.358
Causes			
Blood flow	5(4)	2(9)	0.397
Urination	6(3)	1(10)	0.035
Blood clot	3(8)	4(5)	0.476
Less Production	5(6)	2(7)	0.663
Fatique	6(5)	1(8)	0.0453
Weight Loss	1(10)	6(3)	0.526
Pelvic pain	7(2)	0(11)	0.0411

6.3 Mutlivariable Regression

To implement the multivariable regression, we first import the necessary libraries, including pandas for loading the dataset, numpy for numerical calculations, scikit-learn for the linear regression model, and train_test_split for splitting the data into training and testing sets.

We then load the dataset using the pandas library, define the independent variables (age, pelvic pain, and tumor size) and the dependent variable (fibroid volume), and split the data into training and testing sets.

We fit the linear regression model using the training set and print the coefficients and intercept. We then use the model to predict the values of y for the test set and calculate the root mean squared error to evaluate the accuracy of the model.

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.51832
R Square	0.26866
Adjusted F	0.22803
Standard E	5.21749
Observati	20

ANOVA

	df	*SS*	*MS*	*F*	*gnificance F*
Regressio	1	180	180	6.61224	0.01922
Residual	18	490	27.2222		
Total	19	670			

	Coefficients	*andard Err*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*ower 95.0%*	*pper 95.0%*
Intercept	32	8.24958	3.87899	0.0011	14.6683	49.3317	14.6683	49.3317
3	-7.5	2.91667	-2.57143	0.01922	-13.6277	-1.37231	-13.6277	-1.37231

Figure 6.1.3 multivariable regression

6.3.1 TABLE 2: MULTIVARIABLE REGRESSION

Results from multivariable regression analysis on theassociation between surgery and medication characteristics (n=21)

	Menstruation		After surgery		Medication	
	beta	p	beta	p	beta	P
Blood flow	0.19[0.03, -0.01]	0.19	0.03[0.001, -0.05]	0.01	0.25[0.06,0.01]	**<0.01**
Urination	**0.51[0.2,0.2]**	<0.01	0.26[0.06,0.01]	6.48	0.11[0.01, -0.04]	0.6
Pelvic pain	0.15[0.02, -0.02]	0.6	0.04[0.00, -0.05]	0.36	**0.06[0.39,0.35]**	4.43
Satisfied sleep	0.20[0.04, -0.009]	<0.01	**0.08[0.00, -0.05]**	0.08	0.25[0.06,0.01]	0.09

7. RESULTS & DISCUSSION

Evidence of the plausibility of the null hypothesis is presented through hypothesis testing, which is performed on a statistical sample. A theory is tested by conducting measurements and analysis on a random sample of the population. First, research question and the hypothesis need to be defined. Let's say that the research question is "Is there a significant association between the incidence of uterine fibroids and analysis of recovery from the medication or surgical treatments?". The null hypothesis states that there is no significant association between medication and surgical for the incidence of uterine fibroids, whereas the alternative hypothesis states that significant association exists between them. The survey can be distributed to women aged 18 and above who have visited a gynecologist in the last six months. To ensure statistical power,sample of data is collected from the participants. The odds ratio and the Fisher exact test can be calculated to determine if there is a significant association between medication and surgical for the incidence of uterine fibroids. The Fisher exact test is a statistical test used to determine whether a significant association exists between two categorical variables. In this case of a

medication and surgical for the of uterine fibroids are the categorical variables being analyzed. Thep-value is calculated by using the exact probability distribution of the test statistic under the null hypothesis. The odds ratio is a measure of the strength of association between two categorical variables used to be calculated. The odds ratio is calculated as (ad)/(bc), where a, b, c, and d represents the number of participants in each cell of the contingency table. If the odds ratio is greater than 1, a positive association between the two variables is suggested. To calculate the Fisher exact test, the p- value for the association between the two categorical variables is determined. In this case, the null hypothesis states that there is no significant association between medications and surgical for the incidence of uterine fibroids. The p-value is calculated by the Fisher exact test as the sum of the probabilities of all contingency tables that are relatively more extreme than the observed contingency table. The p-value ranges from 0 to 1, with statistical significance indicated by a p-value less than the 0.05. If p-value is less than 0.05, the null hypothesis is rejected, and it is concluded that there is a significant association between medication and surgery for the incidence of uterine fibroids. In the context of uterine fibroids, the factors associated with the development or progression of fibroids can be identified using multivariable regression The regression techniques can be used depending on the type of outcome variable and the research question are being addressed. A multivariable regression analysis can be used to model the relationship between multiple independent variables (such as medication and surgical interventions) and a dependent variable (such as the presence or severity of uterine fibroids).Overall, multivariable regression analysis can provide valuable insights into the factors that may contribute to the presence or severity of uterine fibroids.These insights are used to inform clinical judgement and guide future research in this area. In summary, Descriptive statistics can be used to summarize and describe the important characteristics of a dataset. In the case of uterine fibroids, the distribution of data related to medication and surgical interventions can be summarized using descriptive statistics.

Medication: The following descriptive statistics can be obtained for medication usage in the context of uterine fibroids: the mean and standard deviation of the duration of medication usage, the frequency distribution of the types of medication used (such as GnRH agonists,progestins ,etc.), the percentage of patients who experienced side effects from medication, and the median and range of medication cost.

Surgical interventions: The follwing decriptive statistics can be obtained for surgical in the context of uterine fibroids: mean and standard deviation of the duration of hospital stay, frequency distribution of the types of surgical interventions used (e.g. myomectomy, hysterectomy, etc.), percentage of patients

who experienced complications during or after surgery and median and range of surgical cost.

Descriptive statistics can be calculated using statistical software such as Excel, SPSS, or R. These statistics can provide important insights into the characteristics of medication and surgical interventions for uterine fibroids, which can be used to inform clinical decision making and future research.

8. CONCLUSION AND FUTURE ENHANCEMENTS

In conclusion, the development of analytical tools to assess the impact of uterine fibroids on women's health and well-being is crucial for effective management and recovery. I Uterine fibroids are a common condition that can have a significant impact on a woman's daily life, including her ability to work, participate in social activities, and maintain her emotional well-being. To assess the impact of fibroids on women's quality of life, several tools have been developed, including the UFS-APR questionnaire and the pictorial blood loss assessment diary. The UFS-APR questionnaire, on the other hand, has been found to be highly reliable, whereas the pictorial blood loss assessment diary only focuses on blood loss without assessing other symptoms associated with fibroids. As a result, combining both tools may be advantageous in developing a comprehensive understanding of the patient's experience, as well as improving their quality of life and health recovery analysis. Prioritizing the patient's quality of life and well-being is critical, as is providing them with the necessary support and resources to effectively manage their condition. Furthermore, the use of analytical tools in the management of uterine fibroids can aid in the development of personalized treatment plans that address the symptoms and needs of the individual patient. This approach can help the patient recover faster by giving them the support and resources they need to manage their condition effectively. Overall, the development of analytical tools that consider the physical, emotional, and social impact of uterine fibroids on women's lives can contribute to a more comprehensive approach to healthcare. By prioritizing the patient's quality of life and well-being, healthcare providers can improve the patient's overall health and support their recovery process. Therefore, future research should focus on developing more reliable and valid analytical tools that comprehensively assess the impact of fibroids on a woman's quality of life.

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