Personal Level screening for COPD and COPD Patient Management Survey

Personal Level screening for COPD

Data pre-prepossessing

```
#rm(list = ls())
```

```
library(readxl)
data0<- read_excel("Personal Level screening for COPD.xlsx",
    sheet = "Sheet6")
#View(data0)

library(tidyverse)
library(knitr)
library(gtsummary)

#glimpse(data0)
```

Demographic and other characteristics of participants

```
#glimpse(data0)

data0[,c(3:10,12,14)] %>%
  tbl_summary(statistic = list(all_continuous() ~ "{mean} ({sd})"),
              label =list(`Do you have any member in your family have experienced the same co
```

Table 1: Demographic and other characteristics of participants

Characteristic	**N = 250**
Age	
18-30	59 (24%)
31-45	40 (16%)
46-60	81 (32%)
60-70	39 (16%)
70+	31 (12%)
Gender	
Female	125 (50%)
Male	125 (50%)
Education	
5th class	1 (0.4%)
B.Pharm	2 (0.8%)
Diploma	35 (14%)
FCPS	1 (0.4%)
Graduate	15 (6.0%)
H.S.C	2 (0.8%)
High school	28 (11%)
Higher secondary	13 (5.2%)
M.Pharm	4 (1.6%)
Masters	36 (14%)
MBBS	7 (2.8%)
No formal education	16 (6.4%)
PhD	3 (1.2%)
Post Graduate	27 (11%)
Primary level	13 (5.2%)
Secondary level	15 (6.0%)
Undergraduate	32 (13%)
Profession	
Actor	2 (0.8%)
Auto rickshaw driver	1 (0.4%)
Beautician	1 (0.4%)
Business	27 (11%)
Carpenter	1 (0.4%)
Chemist	1 (0.4%)
Construction worker	1 (0.4%)
Doctor	5 (2.0%)
Domestic Worker	2 (0.8%)

Table 1: Demographic and other characteristics of participants

Characteristic	**N = 250**
Driver	1 (0.4%)
Engineer	3 (1.2%)
Enteprenure	1 (0.4%)
Factory worker	1 (0.4%)
Farmer	14 (5.6%)
Fisherman	2 (0.8%)
Formar farmer	1 (0.4%)
Garment Worker	2 (0.8%)
Graduate Assistant	1 (0.4%)
Home maker	6 (2.4%)
Housemaid	2 (0.8%)
Housewife	10 (4.0%)
Intern Doctor	1 (0.4%)
Jobless	1 (0.4%)
Laborer	1 (0.4%)
Librarian	1 (0.4%)
Musician	1 (0.4%)
Nurse	1 (0.4%)
Office assistant	2 (0.8%)
Officer,Supply chain	1 (0.4%)
Other	10 (4.0%)
Peon	2 (0.8%)
Pharmacist	3 (1.2%)
Private service	26 (10%)
QA manager	1 (0.4%)
Retired	20 (8.0%)
Retired Army officer	1 (0.4%)
Retired banker	1 (0.4%)
Retired day laborer	1 (0.4%)
Retired factory worker	1 (0.4%)
Retired govt officer	3 (1.2%)
Retired Hawker	1 (0.4%)
Retired policeman	1 (0.4%)
Retired rickshaw puller	1 (0.4%)
Retired security guard	1 (0.4%)
Retired tecaher	3 (1.2%)
Rickshaw puller	2 (0.8%)
Salon Owner	1 (0.4%)
Shop owner	1 (0.4%)

Table 1: Demographic and other characteristics of participants

Characteristic	**N = 250**
Shopkeeper	6 (2.4%)
Small Business	1 (0.4%)
Software Engineer	1 (0.4%)
Street vendor	1 (0.4%)
Student	33 (13%)
Tailor	5 (2.0%)
Teacher	29 (12%)
How many months in the last year have you had bronchitis or chronic coughing with sputum from the chest?	6.0 (3.3)
Unknown	2
For how many years you had bronchitis or chronic coughing with sputum from the chest?	15 (11)
Unknown	2
Have you feel short of breath over the past 12 months?	
Maybe	2 (0.8%)
No	95 (38%)
Yes	153 (61%)
Do you have any member in your family have experienced the same condition? (Yes)	130 (55%)
Unknown	12
Do you have a previous history of smoking?	
No	118 (47%)
Yes	73 (29%)
Yes and on going	59 (24%)
Do you kNow about COPD and its affect in your quality of life?	
I can't go outside without mask due to severe dust allergy. It always triggers asthma.I am becoming unsocial.	1 (0.4%)
Know the pros n cons	1 (0.4%)
No	9 (3.6%)
Not aware	60 (24%)
Somewhat aware	64 (26%)
Yeah i know as my father in law passed away due to this disease	1 (0.4%)
Yes	32 (13%)
Yes, affects outdoor activities	4 (1.6%)
Yes, but limited knowledge	1 (0.4%)
Yes, but not well-informed.	2 (0.8%)
Yes, difficulty in breathing affects work	1 (0.4%)

Table 1: Demographic and other characteristics of participants

Characteristic	**N = 250**
Yes, due to this problem I do skip visit places those have dry weather	1 (0.4%)
Yes, Frequent hospital visit	1 (0.4%)
Yes, Frequent lung infection	1 (0.4%)
Yes, fully aware	53 (21%)
Yes, I am aware	7 (2.8%)
Yes, impacts life quality	1 (0.4%)
Yes, it worsen mobility	1 (0.4%)
Yes, requires frequent care	1 (0.4%)
Yes, severe breathing issue	1 (0.4%)
Yes, severely affects movement, or limited movement	2 (0.8%)
Yes, Worsening breathing capacity	1 (0.4%)
Yes, worsening lung function	1 (0.4%)
Yes. It affects the sleep cycle	3 (1.2%)

Do you have previous history of vaccination? if yes, write the name of vaccine

```
#data0$`Do you have previous history of vaccination? if yes, write the name of vaccine.`


data0 %>%
  separate_rows(`Do you have previous history of vaccination? if yes, write the name of vacci
  count(`Do you have previous history of vaccination? if yes, write the name of vaccine.`, so


vaccine_stat %>% filter(`Do you have previous history of vaccination? if yes, write the name
  mutate(Percent=n*100/250) %>%
  kable(col.names = c("Do you have previous history of vaccination?","N","Percent (out of 250
vaccine_stat %>% filter(`Do you have previous history of vaccination? if yes, write the name
  mutate(Percent=n*100/250) %>%
  kable(col.names = c("If yes, write the name of vaccine","N","Percent (out of 250)"),digits
```

Table 2: Previous history of vaccination

Do you have previous history of vaccination?	N	Percent (out of 250)
No	65	26

Table 3: Previous history of vaccination

If yes, write the name of vaccine	N	Percent (out of 250)
Covid	70	28.0
Influenza	64	25.6
Pneumococcal	56	22.4
Titenus	2	0.8
DPT	2	0.8
HPV	2	0.8
Morderna	2	0.8
TT	2	0.8
DPT	1	0.4
All the vaccines available in bd	1	0.4
EPI	1	0.4
Flu vaccine	1	0.4
Hepatitis B	1	0.4
Pnemococcal	1	0.4
Titenus	1	0.4
Yes	1	0.4

```
vaccine_stat %>% filter(`Do you have previous history of vaccination? if yes, write the name
  ggplot(aes(x=reorder(`Do you have previous history of vaccination? if yes, write the name o
  geom_col()+labs(x="Previous history of vaccination")+
  coord_flip()+
  theme_bw()+
  theme(axis.text = element_text(angle = 0,size = 12),
        axis.title = element_text(size=14))
```

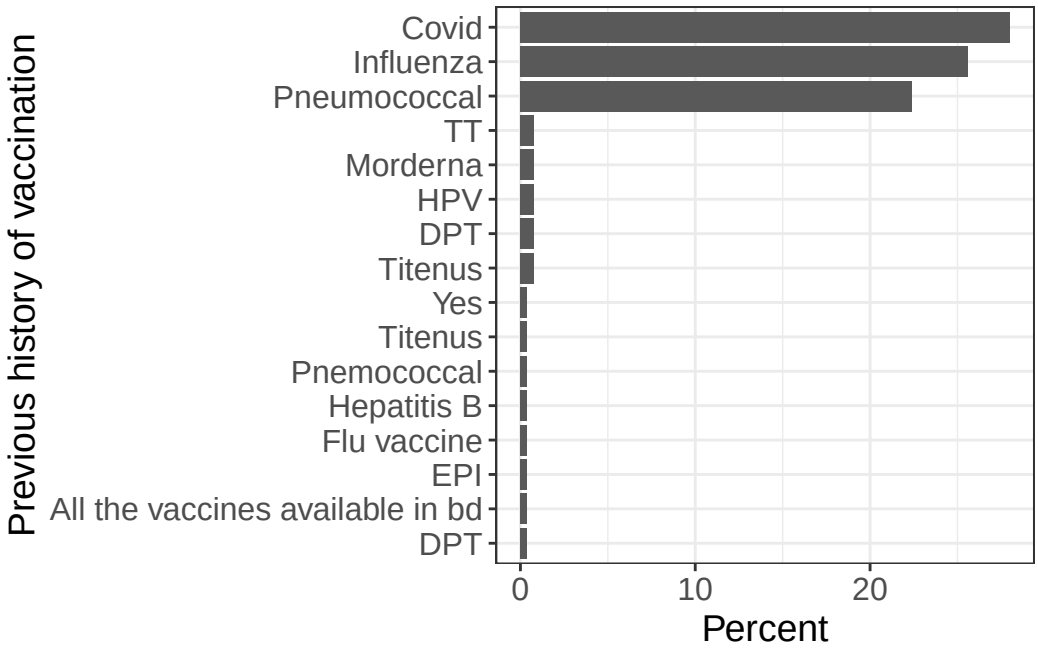

Figure 1: Distribution of vaccination history

COPD Patient Management Survey (n=30)

```
#rm(list = ls())
```

Specialization, the most common age group of COPD patient, Age group comes for recurrent treatment, the most common symptoms presented by COPD patients

```
library(readxl)

Survey <- read_excel("COPD Patient Management Survey.xlsx",
    sheet = "Doctor")

#glimpse(Survey)

Survey %>%
  separate_rows(Specialization,sep = ",") %>%
  count(Specialization, name = "Frequency") %>% # Count occurrences
```

```
  mutate(Percentage = Frequency*100/30) %>%arrange(-Frequency) %>%
  kable(digits = 2,col.names = c("Specialization","Frequency","Percentage (out of 30)"))
```

Specialization	Frequency	Percentage (out of 30)
MBBS	8	26.67
Pulmonologist	4	13.33
Chest Specialist	3	10.00
Respiratory Specialist	3	10.00
NA	3	10.00
FCPS	2	6.67
General practitioner	2	6.67
MD	2	6.67
DTCD	1	3.33
MD	1	3.33
MRCP	1	3.33
Pulmonologist	1	3.33
Thoracic Surgeon	1	3.33
Doctor	1	3.33
FRCS	1	3.33
General Practitioner	1	3.33
MACP(USA)	1	3.33
MS	1	3.33
Medicine	1	3.33
Medicine specialist	1	3.33
None	1	3.33
Pulmonary medicine	1	3.33

```
Survey[,5:6] %>% tbl_summary()
```

Characteristic	**N = 30**
What is the most common age group of COPD patient you treat?	
30-40	2 (6.7%)
40-50	8 (27%)
50-60	14 (47%)
60-70	4 (13%)
70+	2 (6.7%)
Which age group comes for recurrent treatment?	
30-40	1 (3.3%)
40-50	7 (23%)

Characteristic	N = 30
50-60	13 (43%)
60-70	7 (23%)
70+	2 (6.7%)

What are the most common symptoms presented by COPD patients?

```
Survey %>%
  separate_rows(`What are the most common symptoms presented by COPD patients?`,sep = ";") %>
  count(`What are the most common symptoms presented by COPD patients?`, name = "Frequency") 
  mutate(Percentage = Frequency*100/30) %>%arrange(-Frequency) %>%
  kable(digits = 2,col.names = c("Most common symptoms presented by COPD patients","Frequency
```

Most common symptoms presented by COPD patients	Frequency	Percentage (out of 30)
Shortness of Breath	21	70.00
Chronic cough	19	63.33
Chest tightness	10	33.33
Excess mucus production	7	23.33
Wheezing	6	20.00
others	5	16.67

Write symptom if the previous answer is "others"

```
Survey %>%
  separate_rows(`write symptom if the previous answer is "others"`,sep = ",") %>%
  count(`write symptom if the previous answer is "others"`, name = "Frequency") %>% # Count 
  mutate(Percentage = Frequency*100/30) %>%arrange(-Frequency) %>%
  kable(digits = 2,col.names = c("Symptom if the previous answer is others","Frequency","Per
```

Symptom if the previous answer is others	Frequency	Percentage (out of 30)
NA	22	73.33
Fatigue	2	6.67
difficulty breathing	1	3.33
emphysema	1	3.33

Symptom if the previous answer is others	Frequency	Percentage (out of 30)
exertional dyspnea	1	3.33
frequent respiratory infections	1	3.33
respiratory infections	1	3.33
Asthma exacerbation	1	3.33
Chronic bronchitis	1	3.33
Chronic mucus production	1	3.33
Difficulty in movement	1	3.33
Dyspnea	1	3.33
Persistent cough	1	3.33
Productive cough	1	3.33

Which diagnostic tests do you commonly use for diagnosis and monitoring COPD?

```
#glimpse(Survey)

Survey %>%
  separate_rows(`Which diagnostic tests do you commonly use for diagnosis and monitoring COPD
  count(`Which diagnostic tests do you commonly use for diagnosis and monitoring COPD?`, name
  mutate(Percentage = Frequency*100/30) %>%arrange(-Frequency) %>%
  kable(digits = 2,col.names = c("Diagnostic tests do you commonly use for diagnosis and moni
```

Diagnostic tests do you commonly use for diagnosis and monitoring COPD	Frequency	Percentage (out of 30)
Spirometry	18	60.00
Pulmonary function test	13	43.33
Peak airflow	7	23.33
Others	6	20.00
Arterial blood gas analysis	2	6.67
Bronchodilator	1	3.33

write diagnostic test if the previous answer is "others"

```
#glimpse(Survey)

Survey %>%
```

```
  separate_rows(`write diagnostic test if the previous answer is "others"`,sep = ",") %>%
  count(`write diagnostic test if the previous answer is "others"`, name = "Frequency") %>% #
  mutate(Percentage = Frequency*100/30) %>%arrange(-Frequency) %>%
  kable(digits = 2,col.names = c("Diagnostic test if the previous answer is others","Frequenc
```

Diagnostic test if the previous answer is others	Frequency	Percentage (out of 30)
NA	14	46.67
Chest X-ray	9	30.00
CT scan	2	6.67
Chest CT	2	6.67
Bronchoscopy	1	3.33
Chest CT	1	3.33
Lung volume measurement	1	3.33
Periodic lung function tests	1	3.33
Sputum culture	1	3.33
blood oxygen levels	1	3.33
blood test	1	3.33
ABG test	1	3.33
Bronchoscopy	1	3.33
CT scan	1	3.33
Diffusion capacity tests	1	3.33
High-resolution CT scan	1	3.33

Which medication do you typically prescribe for COPD patients?

```
#glimpse(Survey)

Survey %>%
  separate_rows(`Which medication do you typically prescribe for COPD patients?`,sep = ";") %
  count(`Which medication do you typically prescribe for COPD patients?`, name = "Frequency")
  mutate(Percentage = Frequency*100/30) %>%arrange(-Frequency) %>%
  kable(digits = 2,col.names = c("Medication do you typically prescribe for COPD patients?","
```

Medication do you typically prescribe for COPD patients?	Frequency	Percentage (out of 30)
Combination inhalers (Bronchodilators+ steroids)	17	56.67
Bronchodialators	12	40.00

Medication do you typically prescribe for COPD patients?	Frequency	Percentage (out of 30)
Inhaled corticosteroids	11	36.67
Antibiotics	8	26.67
Phosphodiesterase-4 inhibitors (PDE-4 inhibitors)	5	16.67
Methylxanthines	4	13.33
Anticholinergics	2	6.67
Mucolytics	2	6.67
Other	1	3.33
Respiratory Stimulants	1	3.33

If previous answer is other, Kindly specify-

Two answers-Long acting and Long-acting beta-agonists.

What is the average cost of a month's worth of COPD medication for a patient (estimate in local currency)?

```
Survey %>% select(`What is the average cost of a month's worth of COPD medication for a pati
  tbl_summary()
```

Characteristic	**N = 30**
What is the average cost of a month's worth of COPD medication for a patient (estimate in local currency)?	
10-12 thousand tk	1 (3.3%)
10,000tk	1 (3.3%)
10000 tk	1 (3.3%)
1500-5000 tk	1 (3.3%)
15000-20000 tk	1 (3.3%)
15000 tk	1 (3.3%)
2000-6000 tk	1 (3.3%)
2000 tk	5 (17%)
3-5K tk	1 (3.3%)
3000-4000 tk	1 (3.3%)
3000-4500 tk	1 (3.3%)
4 Thousands	1 (3.3%)
5000 tk	1 (3.3%)
5000+ tk	1 (3.3%)

Characteristic	N = 30
8-10,000 tk	1 (3.3%)
About 10000 tk	1 (3.3%)
About 5-6k tk	1 (3.3%)
Around 1000-1200 tk	1 (3.3%)
Consultation and treatment costs vary	1 (3.3%)
Consultation fees vary; medication costs depend on prescription	1 (3.3%)
Depends on treatment plan	1 (3.3%)
Sorry	1 (3.3%)
variable	3 (10%)
Varies based on procedures and medications	1 (3.3%)

Do you observe any differences in medication response between smokers and non-smokers? If yes please describe-

```
Survey %>% select(`Do you observe any differences in medication response between smokers and
  tbl_summary()
```

Characteristic	N = 30
Do you observe any differences in medication response between smokers and non-smokers?	29 (97%)
If Yes, Please describe-	
Medications works better in non-smokers and early recovery than smokers.	1 (10%)
Non-smokers has early response after drug administration.	1 (10%)
Non smokers response rapidly after medication	1 (10%)
Nonsmokers improves more	1 (10%)
Significant improvement in non smokers	1 (10%)
Smokers has frequent sputum production than non smokers	1 (10%)
Smokers response slowly and recurrence rate is more	1 (10%)
Smokers takes long time for recovery	1 (10%)
Symptoms are prominent in smokers	1 (10%)
Treatment required less for non smokers	1 (10%)
Unknown	20

How often do you recommend follow up tests for COPD patient (e.g. spirometry)?+

How frequently do COPD patients require hospitalization due to exacerbations? +

What lifestyle changes do you most commonly recommend to COPD patients? +

Please specify if previous answer is "Others" +

Are there any new treatments or medication for COPD that you find promising?

```
Survey %>% select(`How often do you recommend follow up tests for COPD patient (e.g. spirome
  tbl_summary()
```

Characteristic	**N = 30**
How often do you recommend follow up tests for COPD patient (e.g. spirometry)?	
Annually	10 (33%)
As needed depending on symptom	14 (47%)
Every 3 months	3 (10%)
Every 6 months	3 (10%)
How frequently do COPD patients require hospitalization due to exacerbations?	
Frequently (3+ times in a year)	1 (3.3%)
Occasionally (1-2 times a year)	12 (40%)
Rarely	17 (57%)
What lifestyle changes do you most commonly recommend to COPD patients?	
Diet and Exercise	2 (6.7%)
Plumonary rehabilitation	2 (6.7%)
Smoking cessation	26 (87%)
Please specify if previous answer is "Others"	
Avoid allergen, monitor air quality	1 (8.3%)
Avoidance of pollutants	1 (8.3%)
Avoiding allergens, lifestyle modifications, vaccinations	1 (8.3%)
Diet and regularity in medication	1 (8.3%)
Diet, manage stress level	1 (8.3%)
Exercise for lung	1 (8.3%)
Exercise, avoid pollution, stay hydrated	1 (8.3%)
Maintain optimal body weight, avoid pollution	1 (8.3%)
Nutritional support	1 (8.3%)
Oxygen therapy	1 (8.3%)

Characteristic	N = 30
pulmonary rehabilitation	1 (8.3%)
Vaccinations (e.g., influenza, pneumococcal)	1 (8.3%)
Unknown	18
Are there any new treatments or medication for COPD that you find promising?	
Alpha 1 antitrypsin replacement therapy	1 (7.1%)
Benralizumab	1 (7.1%)
Biologics for severe asthma	1 (7.1%)
Community-based support groups	1 (7.1%)
Dual bronchodilator inhalers	1 (7.1%)
Implementation of remote pulmonary rehabilitation programs	1 (7.1%)
Inhaled combination therapies (ICS+LABA)	1 (7.1%)
Inhaled corticosteroid and long acting beta agoinst	1 (7.1%)
N/A	1 (7.1%)
Oxygen inhalation	1 (7.1%)
p38 MAPK inhibitor	1 (7.1%)
Patient education program	1 (7.1%)
Patient education programs	1 (7.1%)
Telemedicine consultations	1 (7.1%)
Unknown	16