Impact of COVID-19 on Students (Mental Health)

COVID-19 has drastically impacted on the education, social life and mental health of students. In this study, a cross-sectional survey is conducted with a sample size of 1181 students of different age groups from different educational institutions in Delhi.

1. Importing Libaries

In [1]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import os
```

2. Loading Data

In [2]:
```
df = pd.read_csv("C:\\Users\\ASUS\Desktop\\JN\\COVID-19 Survey Student Responses.xls")
df.head()
```

Out[2]:

	ID	Region of residence	Age of Subject	Time spent on Online Class	Rating of Online Class experience	Medium for online class	Time spent on self study	Time spent on fitness	Time spent on sleep	Time spent on social media	Prefered social media platform	Tim spe o T
0	R1	Delhi-NCR	21	2.0	Good	Laptop/Desktop	4.0	0.0	7.0	3.0	Linkedin	
1	R2	Delhi-NCR	21	0.0	Excellent	Smartphone	0.0	2.0	10.0	3.0	Youtube	
2	R3	Delhi-NCR	20	7.0	Very poor	Laptop/Desktop	3.0	0.0	6.0	2.0	Linkedin	
3	R4	Delhi-NCR	20	3.0	Very poor	Smartphone	2.0	1.0	6.0	5.0	Instagram	
4	R5	Delhi-NCR	21	3.0	Good	Laptop/Desktop	3.0	1.0	8.0	3.0	Instagram	

3. Data Insights

In [3]:
```
# Tail of Data
df.tail()
```

Out[3]:

	ID	Region of residence	Age of Subject	Time spent on Online Class	Rating of Online Class experience	Medium for online class	Time spent on self study	Time spent on fitness	Time spent on sleep	Time spent on social media	Prefere socia medi platforr
1177	R1191	Delhi-NCR	12	3.0	Good	Smartphone	4.0	1.0	8.0	1.0	Instagrar
1178	R1192	Delhi-NCR	14	6.0	Average	Smartphone	4.0	1.0	9.0	1.0	Whatsap
1179	R1193	Delhi-NCR	13	4.0	Average	Smartphone	0.0	0.5	8.0	3.0	Youtub
1180	R1194	Delhi-NCR	14	5.0	Excellent	Laptop/Desktop	3.5	1.0	8.0	0.5	Youtub
1181	R1195	Delhi-NCR	13	5.0	Good	Tablet	2.0	0.5	7.0	1.0	Whatsap

In [4]:
```
# Information of Data
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 1182 entries, 0 to 1181
Data columns (total 19 columns):
 #   Column                                                                Non-Null Count  Dtype
---  ------                                                                --------------  -----
 0   ID                                                                    1182 non-null   object
 1   Region of residence                                                   1182 non-null   object
 2   Age of Subject                                                        1182 non-null   int64
 3   Time spent on Online Class                                            1182 non-null   float64
 4   Rating of Online Class experience                                     1158 non-null   object
 5   Medium for online class                                               1131 non-null   object
 6   Time spent on self study                                              1182 non-null   float64
 7   Time spent on fitness                                                 1182 non-null   float64
 8   Time spent on sleep                                                   1182 non-null   float64
 9   Time spent on social media                                            1182 non-null   float64
 10  Prefered social media platform                                        1182 non-null   object
 11  Time spent on TV                                                      1182 non-null   object
 12  Number of meals per day                                               1182 non-null   int64
 13  Change in your weight                                                 1182 non-null   object
 14  Health issue during lockdown                                          1182 non-null   object
 15  Stress busters                                                        1182 non-null   object
 16  Time utilized                                                         1182 non-null   object
 17  Do you find yourself more connected with your family, close friends , relatives  ?  1182 non-null   object
 18  What you miss the most                                                1182 non-null   object
dtypes: float64(5), int64(2), object(12)
memory usage: 175.6+ KB
```

In [5]:
```
# columns of Data
df.columns
```

Out[5]:
```
Index(['ID', 'Region of residence', 'Age of Subject',
       'Time spent on Online Class', 'Rating of Online Class experience',
       'Medium for online class', 'Time spent on self study',
       'Time spent on fitness', 'Time spent on sleep',
       'Time spent on social media', 'Prefered social media platform',
       'Time spent on TV', 'Number of meals per day', 'Change in your weight',
       'Health issue during lockdown', 'Stress busters', 'Time utilized',
       'Do you find yourself more connected with your family, close friends , relatives  ?',
       'What you miss the most'],
      dtype='object')
```

In [6]:
```
# Checking if any null values are present
df.isnull().sum()
```

Out[6]:
```
ID                                                                  0
Region of residence                                                 0
Age of Subject                                                      0
Time spent on Online Class                                          0
Rating of Online Class experience                                  24
Medium for online class                                            51
Time spent on self study                                            0
Time spent on fitness                                               0
Time spent on sleep                                                 0
Time spent on social media                                          0
Prefered social media platform                                      0
Time spent on TV                                                    0
Number of meals per day                                             0
Change in your weight                                               0
Health issue during lockdown                                        0
Stress busters                                                      0
Time utilized                                                       0
Do you find yourself more connected with your family, close friends , relatives  ?    0
What you miss the most                                              0
dtype: int64
```

In [7]:
```
# Shape of the Data
df.shape
```

Out[7]:
```
(1182, 19)
```

Data Cleaning

In [8]:
```
df=df.dropna()
df.isnull().sum()
```

Out[8]:
```
ID                                                                  0
Region of residence                                                 0
Age of Subject                                                      0
Time spent on Online Class                                          0
Rating of Online Class experience                                   0
Medium for online class                                             0
Time spent on self study                                            0
Time spent on fitness                                               0
Time spent on sleep                                                 0
Time spent on social media                                          0
Prefered social media platform                                      0
Time spent on TV                                                    0
Number of meals per day                                             0
Change in your weight                                               0
Health issue during lockdown                                        0
Stress busters                                                      0
Time utilized                                                       0
Do you find yourself more connected with your family, close friends , relatives  ?    0
What you miss the most                                              0
dtype: int64
```

5. EDA and Visualisation

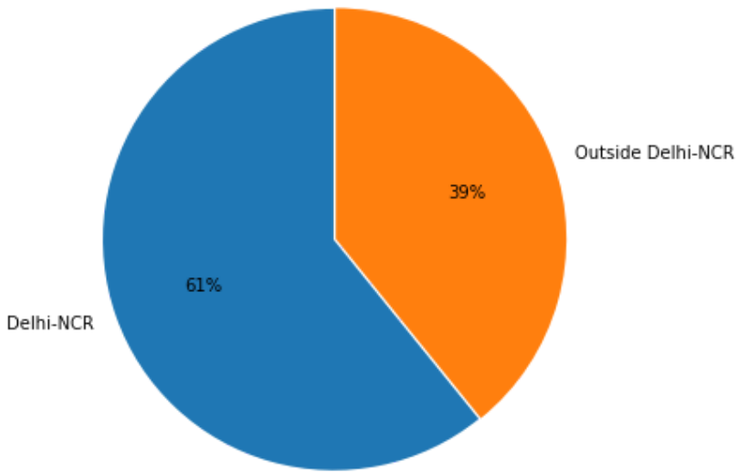
5.1 Data Exploration

5.1.1 Region they belong to

In [9]:
```
df['Region of residence'].unique()
df['Region of residence'].value_counts()
```

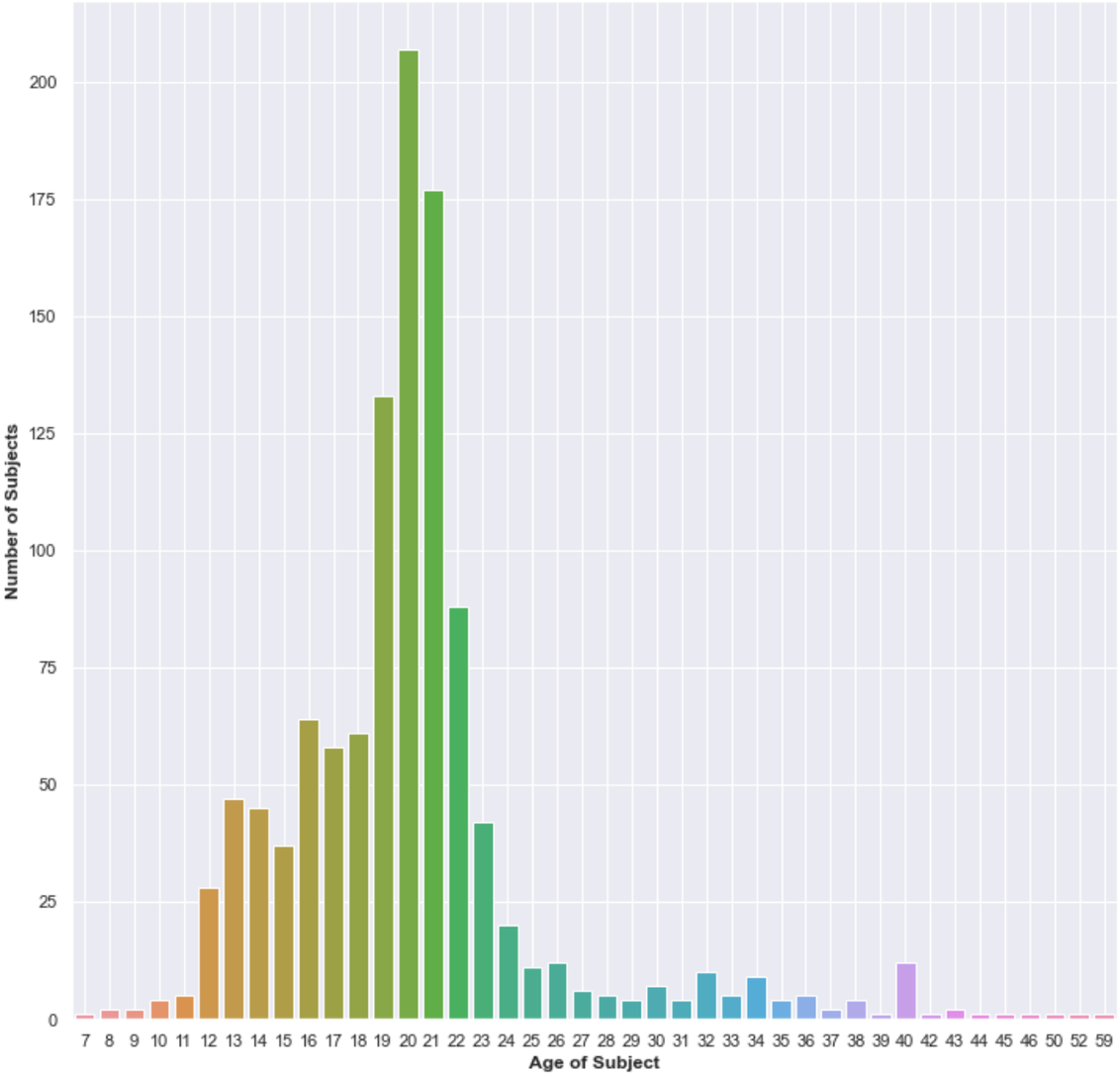
Out[9]:
```
Delhi-NCR            688
Outside Delhi-NCR    443
Name: Region of residence, dtype: int64
```

In [10]:
```
dict_ = df['Region of residence'].value_counts().to_dict()
plt.figure(figsize=(6,8))
plt.pie(x=dict_.values(), labels=dict_.keys(),autopct='%1.0f%%',
 startangle=90, explode = [0.01,0])
plt.show()
```



5.1.2 Age distribution

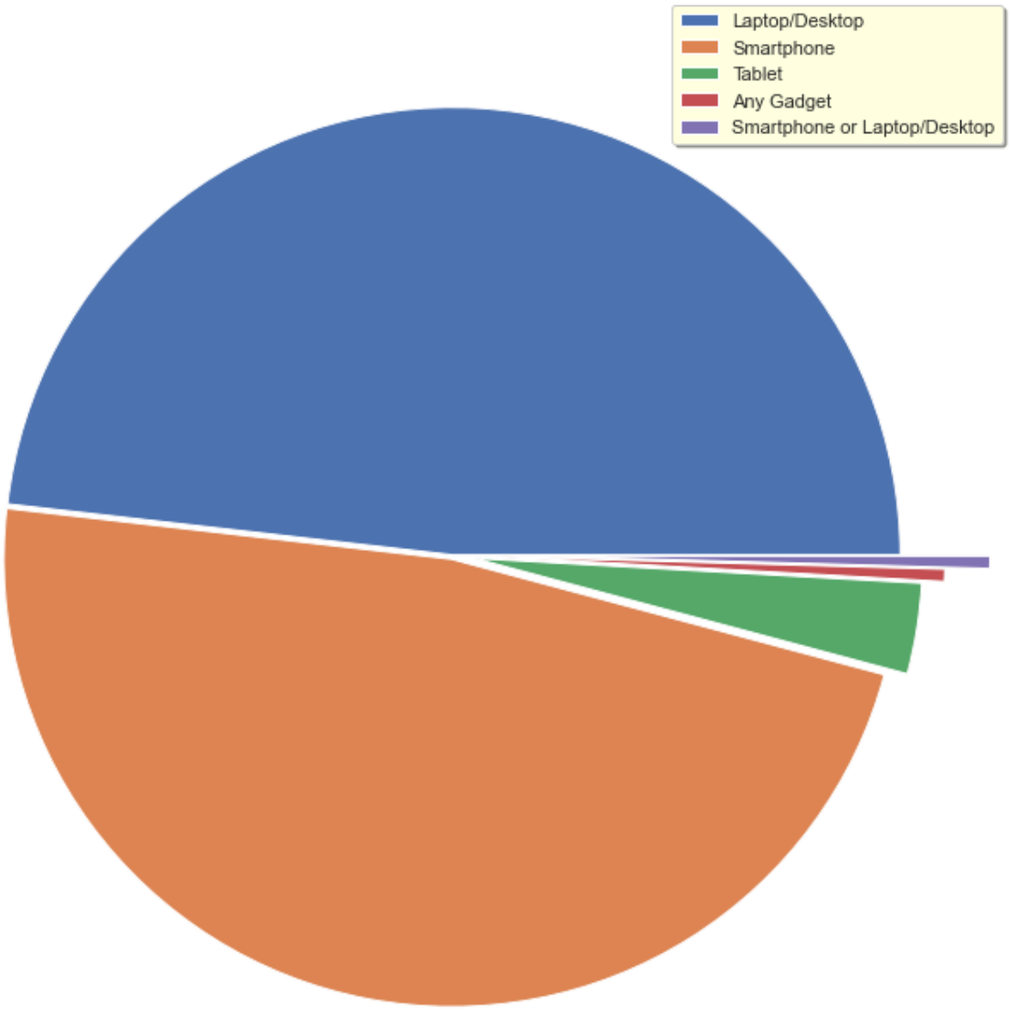
In [11]:
```
plt.figure(figsize=(12,12))
sns.set(style='darkgrid')
sns.countplot(x="Age of Subject", data=df)
plt.xlabel('Age of Subject', weight='bold')
plt.ylabel('Number of Subjects', weight='bold')
plt.grid('True')
```



Here, we can see that most number of students of 20 years age has participated in this survey

5.1.3 Device they used for online classes

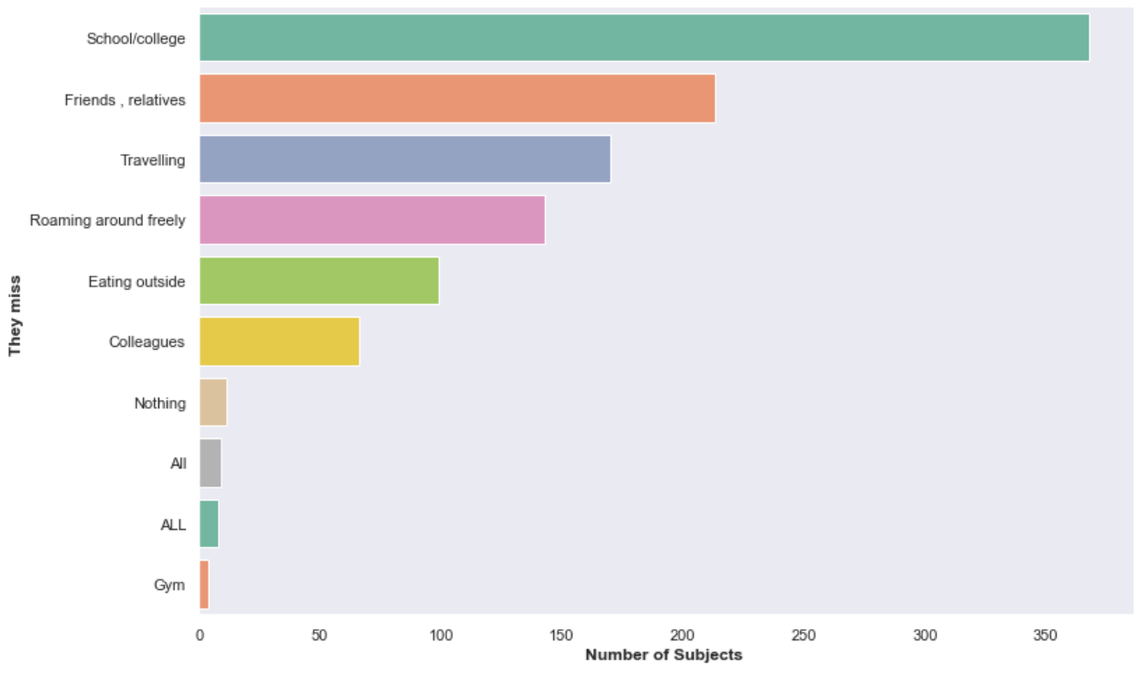
In [12]:
```
dict_ = df['Medium for online class'].value_counts().to_dict()
plt.figure(figsize=(12,12))
plt.pie(x=dict_.values(),
 startangle=0, explode = [0, 0.01,0.05,0.1,0.2])
plt.legend(labels=dict_.keys(), loc='best', shadow=True, facecolor='lightyellow')
plt.show()
```



Most devices used during online classes are Laptop/Desktop and Smartphones.

5.1.4 Which activities they miss doing

In [13]:
```
plt.figure(figsize=(12,8))
sns.set(style='dark')
sns.countplot(y= 'What you miss the most' , data=df,order=df['What you miss the most'].value_counts().index[:10], palette='Se
plt.ylabel('They miss ', weight='bold')
plt.xlabel('Number of Subjects ', weight='bold')
plt.show()
```

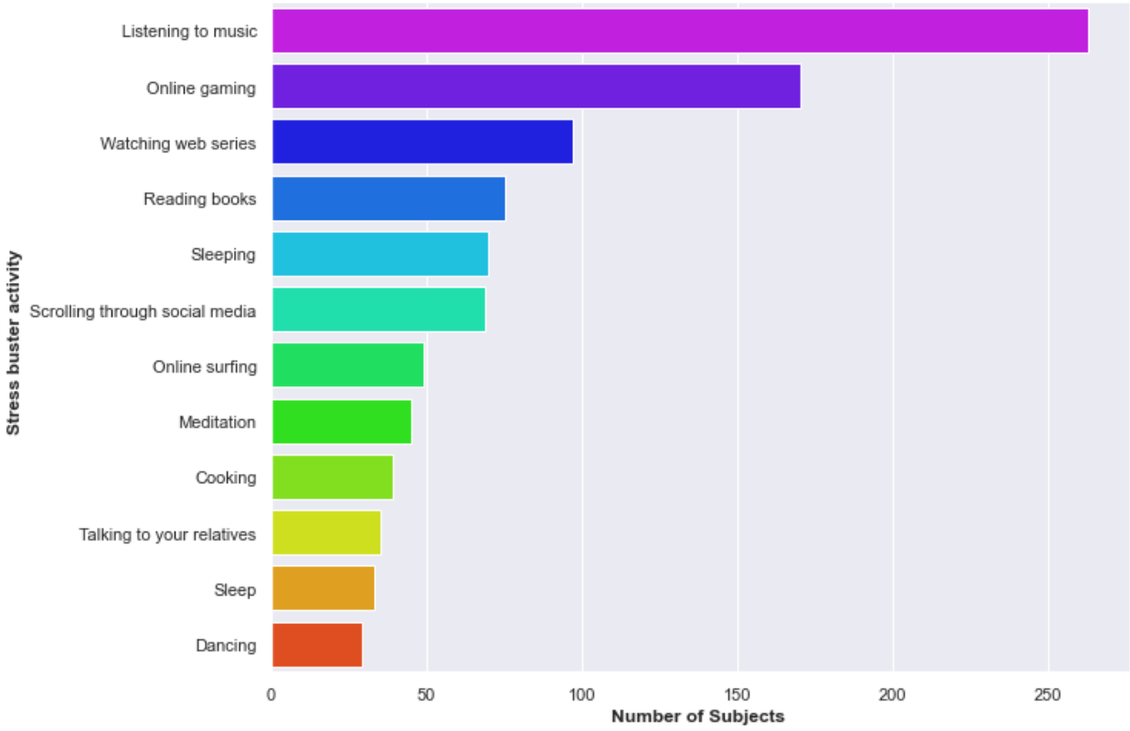


Here we can see that most of the students miss going to schools and colleges.

5.1.5 Their Favourite Stress Busters

In [14]:
```
plt.figure(figsize=(10,8))
```

```
sns.set(style='darkgrid')
sns.countplot(y= 'Stress busters' , data=df,order=df['Stress busters'].value_counts().index[:12], palette='gist_rainbow_r')
plt.ylabel('Stress buster activity ', weight='bold')
plt.xlabel('Number of Subjects ', weight='bold')
plt.show()
```



We all tend to do things that are related with our hobbies to release stress. But the most common activity is listening to music, and that is what we are observing here also. Other activities such as online gaming, watching webseries and reading books are also stress busters for so many students.

5.1.6 Time spent on self study

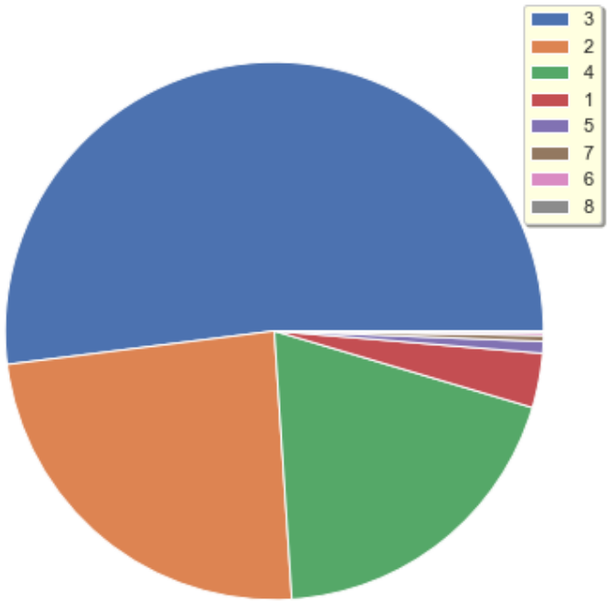
In [15]:
```
df['Time spent on self study'].unique()
df['Time spent on self study'].value_counts()
```

Out[15]:
```
2.0    333
3.0    198
1.0    166
4.0    146
5.0     73
0.0     72
6.0     50
8.0     26
10.0    14
7.0     14
0.5      8
1.5      7
2.5      7
12.0     5
3.5      3
9.0      2
17.0     1
18.0     1
2.3      1
1.2      1
6.5      1
11.0     1
4.5      1
Name: Time spent on self study, dtype: int64
```

5.2 Impact on mental health

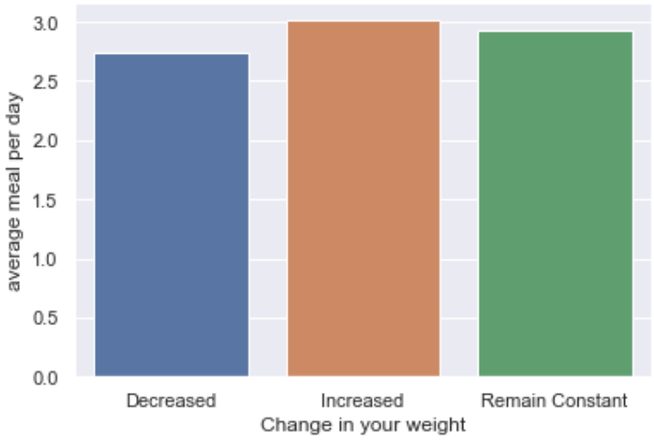
5.2.1 Number of meals per day

In [16]:
```
dict_ = df['Number of meals per day'].value_counts().to_dict()
plt.figure(figsize=(7,8))
plt.pie(x=dict_.values(),
 startangle=0, explode =None)
plt.legend(labels=dict_.keys(), loc='best', shadow=True, facecolor='lightyellow')
plt.show()
```



5.2.2 Change in weight on the basis of meals per day

In [17]:
```
weight_changes = df.groupby('Change in your weight')['Number of meals per day'].mean().reset_index()
sns.barplot(data = weight_changes, x = 'Change in your weight', y='Number of meals per day')
plt.ylabel('average meal per day')
plt.xticks(rotation = 'horizontal')
plt.show()
plt.tight_layout()
```



<Figure size 432x288 with 0 Axes>

5.2.3 Health issue during lockdown

In [18]:
```
df['Health issue during lockdown'].value_counts(normalize = True)
```

Out[18]:
```
NO     0.859416
YES    0.140584
Name: Health issue during lockdown, dtype: float64
```

85% students were in good health and remaining 14% faced health issues.

5.2.4 Feeling connected with closed ones

In [19]:
```
df['Do you find yourself more connected with your family, close friends , relatives  ?'].value_counts(normalize=True)
```

Out[19]:
```
YES    0.702918
NO     0.297082
Name: Do you find yourself more connected with your family, close friends , relatives  ?, dtype: float64
```

A good sign is that 70 % students felt connected with their closed ones.