In [13]:
```
#Retreiving Data from Mongo DB
import pymongo
import requests

import pandas as pd

print("Reading data From Mongo DB")
client = pymongo.MongoClient("mongodb+srv://m001-student:m001-mongodb-basics@cluster0.laxah.mongodb.net/myFirstDatabase?retryWrites=true&w=majority", serverSelectionT
db=client.marcin
#normalization of names
coll=db.obesity_data
coll.update_one({'Country':'Czechia'}, {'$set':{ 'Country':'Czech Republic'}})
coll.update_one({'Country':'Republic of Korea'}, {'$set':{ 'Country':'Korea'}})
coll.update_one({'Country':'United Kingdom of Great Britain and Northern Ireland'}, {'$set':{ 'Country':'United Kingdom'}})
coll.update_one({'Country':'United States of America'}, {'$set':{ 'Country':'United States'}})

coll=db.population_data
coll.update_one({'Country':'Czech Republic (Czechia)'}, {'$set':{ 'Country':'Czech Republic'}})
coll.update_one({'Country':'South Korea'}, {'$set':{ 'Country':'Korea'}})

coll=db.covid_data
coll.update_one({'location':'Czechia'}, {'$set':{ 'location':'Czech Republic'}})
coll.update_one({'location':'Korea, South'}, {'$set':{ 'location':'Korea'}})
coll.update_one({'location':'US'}, {'$set':{ 'location':'United States'}})
countries=['Austria', 'Australia', 'Belgium', 'Canada', 'Chile', 'Colombia', 'Czech Republic', 'Denmark',
           'Estonia', 'Finland', 'France',  'Germany', 'Greece', 'Hungary', 'Iceland', 'Ireland', 'Israel', 'Italy',
           'Japan', 'Korea', 'Latvia', 'Lithuania', 'Luxembourg', 'Mexico', 'Netherlands', 'New Zealand', 'Norway',
           'Poland', 'Portugal', 'Slovakia', 'Slovenia', 'Spain', 'Sweden',
           'Switzerland', 'Turkey', 'United Kingdom', 'United States', 'China' ,'India']
obesity_list=[]
country_list=[]
population_list=[]
covid_deaths_list=[]
for country in countries:
    #population
    coll=db.population_data
    x=coll.find({'Country':country}, {'_id':0, 'Country':1, 'Population':1})
    for data in x:
        population_list.append(data['Population'])
        country_list.append(data['Country'])

    #obesity data
    coll=db.obesity_data
    x=coll.find({'Country':country}, {'_id':0, 'Obesity_percentage':1})
    for data in x:
        obesity_list.append(data['Obesity_percentage'])

    #covid data
    coll=db.covid_data
    x=coll.find({'location':country}, {'_id':0, 'deaths':1})
    for data in x:
        covid_deaths_list.append(data['deaths'])

    #printout of list fr checkup
print(f"list countries {country_list} and  {len(country_list)}")
print(f"list population {population_list}  and  {len(population_list)}")
print(f"list obesity {obesity_list}  and  {len(obesity_list)} ")
print(f"list covid {covid_deaths_list} and  {len(covid_deaths_list)} ")

data= { 'Country':country_list,
       'Population':population_list,
       'Obesity_percentage':obesity_list,
        'covid_deaths':covid_deaths_list}

df=pd.DataFrame(data)
df
```

```
Reading data From Mongo DB
list countries ['Austria', 'Australia', 'Belgium', 'Canada', 'Chile', 'Colombia', 'Czech Republic', 'Denmark', 'Estonia', 'Finland', 'France', 'Germany', 'Greece', 'Hu
ngary', 'Iceland', 'Ireland', 'Israel', 'Italy', 'Japan', 'Korea', 'Latvia', 'Lithuania', 'Luxembourg', 'Mexico', 'Netherlands', 'New Zealand', 'Norway', 'Poland', 'Po
rtugal', 'Slovakia', 'Slovenia', 'Spain', 'Sweden', 'Switzerland', 'Turkey', 'United Kingdom', 'United States', 'China', 'India'] and  39
list population [9006398, 25499884, 11589623, 37742154, 19116201, 50882891, 10708981, 5792202, 1326535, 5540720, 65273511, 83783942, 10423054, 9660351, 341243, 493778
6, 8655535, 60461826, 126476461, 51269185, 1886198, 2722289, 625978, 128932753, 17134872, 4822233, 5421241, 37846611, 10196709, 5459642, 2078938, 46754778, 10099265, 8
654622, 84339067, 67886011, 331002651, 1439323776, 1380004385]  and  39
list obesity ['21.90000', '30.40000', '24.50000', '31.30000', '28.80000', '22.10000', '28.50000', '21.30000', '23.80000', '24.90000', '23.20000', '25.70000', '27.4000
0', '28.60000', '23.10000', '26.90000', '26.70000', '22.90000', '4.40000', '4.90000', '25.70000', '28.40000', '24.20000', '28.40000', '23.10000', '32.00000', '25.0000
0', '25.60000', '23.20000', '22.40000', '22.50000', '27.10000', '22.10000', '21.20000', '32.20000', '29.50000', '37.30000', '6.60000', '3.80000']  and  39
list covid [10152, 910, 24140, 24110, 26073, 72725, 29141, 2482, 1148, 911, 104077, 82588, 10242, 27172, 29, 4896, 6361, 120256, 10052, 1825, 2118, 3900, 792, 215918,
17339, 26, 753, 66533, 16973, 11611, 4236, 77943, 14000, 10617, 39398, 127734, 574340, 4845, 204832] and  39
```

Out[13]:

	Country	Population	Obesity_percentage	covid_deaths
0	Austria	9006398	21.90000	10152
1	Australia	25499884	30.40000	910
2	Belgium	11589623	24.50000	24140
3	Canada	37742154	31.30000	24110
4	Chile	19116201	28.80000	26073
5	Colombia	50882891	22.10000	72725
6	Czech Republic	10708981	28.50000	29141
7	Denmark	5792202	21.30000	2482
8	Estonia	1326535	23.80000	1148
9	Finland	5540720	24.90000	911
10	France	65273511	23.20000	104077
11	Germany	83783942	25.70000	82588
12	Greece	10423054	27.40000	10242
13	Hungary	9660351	28.60000	27172
14	Iceland	341243	23.10000	29
15	Ireland	4937786	26.90000	4896
16	Israel	8655535	26.70000	6361
17	Italy	60461826	22.90000	120256
18	Japan	126476461	4.40000	10052
19	Korea	51269185	4.90000	1825
20	Latvia	1886198	25.70000	2118

	Country	Population	Obesity_percentage	covid_deaths
21	Lithuania	2722289	28.40000	3900
22	Luxembourg	625978	24.20000	792
23	Mexico	128932753	28.40000	215918
24	Netherlands	17134872	23.10000	17339
25	New Zealand	4822233	32.00000	26
26	Norway	5421241	25.00000	753
27	Poland	37846611	25.60000	66533
28	Portugal	10196709	23.20000	16973
29	Slovakia	5459642	22.40000	11611
30	Slovenia	2078938	22.50000	4236
31	Spain	46754778	27.10000	77943
32	Sweden	10099265	22.10000	14000
33	Switzerland	8654622	21.20000	10617
34	Turkey	84339067	32.20000	39398
35	United Kingdom	67886011	29.50000	127734
36	United States	331002651	37.30000	574340
37	China	1439323776	6.60000	4845
38	India	1380004385	3.80000	204832

In [15]:
```
df['covid_death_percentage']=df['covid_deaths']/df['Population']
```

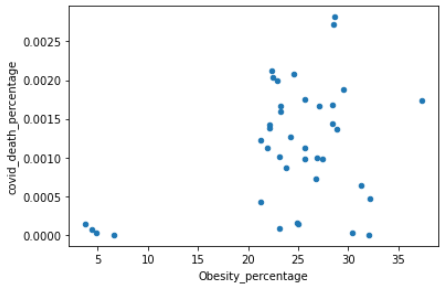
In [19]:
```
df['Obesity_percentage']= pd.to_numeric(df['Obesity_percentage'])
```

In [20]:
```
df
```

Out[20]:

	Country	Population	Obesity_percentage	covid_deaths	covid_death_percentage
0	Austria	9006398	21.9	10152	0.001127
1	Australia	25499884	30.4	910	0.000036
2	Belgium	11589623	24.5	24140	0.002083
3	Canada	37742154	31.3	24110	0.000639
4	Chile	19116201	28.8	26073	0.001364
5	Colombia	50882891	22.1	72725	0.001429
6	Czech Republic	10708981	28.5	29141	0.002721
7	Denmark	5792202	21.3	2482	0.000429
8	Estonia	1326535	23.8	1148	0.000865
9	Finland	5540720	24.9	911	0.000164
10	France	65273511	23.2	104077	0.001594
11	Germany	83783942	25.7	82588	0.000986
12	Greece	10423054	27.4	10242	0.000983
13	Hungary	9660351	28.6	27172	0.002813
14	Iceland	341243	23.1	29	0.000085
15	Ireland	4937786	26.9	4896	0.000992
16	Israel	8655535	26.7	6361	0.000735
17	Italy	60461826	22.9	120256	0.001989
18	Japan	126476461	4.4	10052	0.000079
19	Korea	51269185	4.9	1825	0.000036
20	Latvia	1886198	25.7	2118	0.001123
21	Lithuania	2722289	28.4	3900	0.001433
22	Luxembourg	625978	24.2	792	0.001265
23	Mexico	128932753	28.4	215918	0.001675
24	Netherlands	17134872	23.1	17339	0.001012
25	New Zealand	4822233	32.0	26	0.000005
26	Norway	5421241	25.0	753	0.000139
27	Poland	37846611	25.6	66533	0.001758
28	Portugal	10196709	23.2	16973	0.001665
29	Slovakia	5459642	22.4	11611	0.002127
30	Slovenia	2078938	22.5	4236	0.002038
31	Spain	46754778	27.1	77943	0.001667
32	Sweden	10099265	22.1	14000	0.001386
33	Switzerland	8654622	21.2	10617	0.001227
34	Turkey	84339067	32.2	39398	0.000467
35	United Kingdom	67886011	29.5	127734	0.001882
36	United States	331002651	37.3	574340	0.001735
37	China	1439323776	6.6	4845	0.000003
38	India	1380004385	3.8	204832	0.000148

In [28]:
```
#image for the conrol
import matplotlib.pyplot as plt
df.plot(x ='Obesity_percentage' , y='covid_death_percentage', kind = 'scatter')
plt.show()
```



In [30]:
```
#saving data to csv file for Statistical Processing and Visualisation
df.to_csv('df_for_R.csv', sep=',')
```

In [24]:
```
#writing  of df to postgress SQL table
from sqlalchemy import create_engine
import psycopg2
import pandas as pds

alchemyEngine  = create_engine('postgresql+psycopg2://marcin:marcin12@postgresql-28021-0.cloudclusters.net:28035/dap', pool_recycle=3600);
postgreSQLConnection    = alchemyEngine.connect();
postgreSQLTable         = "Covid_BMI";
try:
    frame = df.to_sql(postgreSQLTable, postgreSQLConnection, if_exists='replace');
except ValueError as vx:
    print(vx)
except Exception as ex:
    print(ex)
else:

    print(f"PostgreSQL Table {postgreSQLTable}  has been created successfully");
finally:
    postgreSQLConnection.close();
```

```
PostgreSQL Table Covid_BMI  has been created successfully
```

In [25]:
```
#read from PostSQL DB

alchemyEngine  = create_engine('postgresql+psycopg2://marcin:marcin12@postgresql-28021-0.cloudclusters.net:28035/dap', pool_recycle=3600);
postgreSQLConnection    = alchemyEngine.connect();
postgreSQLTable         = "Covid_BMI";
# Read data from PostgreSQL database table and load into a DataFrame instance

#dataFrame       = pds.read_sql("select \"Country\"  from \"Covid_BMI\" ", postgreSQLConnection);
dataFrame       = pds.read_sql("select *  from \"Covid_BMI\" ", postgreSQLConnection);
print(dataFrame);
```

```
    index         Country  Population  Obesity_percentage  covid_deaths  \
0       0         Austria     9006398                21.9         10152
1       1       Australia    25499884                30.4           910
2       2         Belgium    11589623                24.5         24140
3       3          Canada    37742154                31.3         24110
4       4           Chile    19116201                28.8         26073
5       5        Colombia    50882891                22.1         72725
6       6  Czech Republic    10708981                28.5         29141
7       7         Denmark     5792202                21.3          2482
8       8         Estonia     1326535                23.8          1148
9       9         Finland     5540720                24.9           911
10     10          France    65273511                23.2        104077
11     11         Germany    83783942                25.7         82588
12     12          Greece    10423054                27.4         10242
13     13         Hungary     9660351                28.6         27172
14     14         Iceland      341243                23.1            29
15     15         Ireland     4937786                26.9          4896
16     16          Israel     8655535                26.7          6361
17     17           Italy    60461826                22.9        120256
18     18           Japan   126476461                 4.4         10052
19     19           Korea    51269185                 4.9          1825
20     20          Latvia     1886198                25.7          2118
21     21       Lithuania     2722289                28.4          3900
22     22      Luxembourg      625978                24.2           792
23     23          Mexico   128932753                28.4        215918
24     24     Netherlands    17134872                23.1         17339
25     25     New Zealand     4822233                32.0            26
26     26          Norway     5421241                25.0           753
27     27          Poland    37846611                25.6         66533
28     28        Portugal    10196709                23.2         16973
29     29        Slovakia     5459642                22.4         11611
30     30        Slovenia     2078938                22.5          4236
31     31           Spain    46754778                27.1         77943
32     32          Sweden    10099265                22.1         14000
33     33     Switzerland     8654622                21.2         10617
34     34          Turkey    84339067                32.2         39398
35     35  United Kingdom    67886011                29.5        127734
36     36   United States   331002651                37.3        574340
37     37           China  1439323776                 6.6          4845
38     38           India  1380004385                 3.8        204832

    covid_death_percentage
0                 0.001127
1                 0.000036
2                 0.002083
3                 0.000639
4                 0.001364
5                 0.001429
6                 0.002721
7                 0.000429
8                 0.000865
9                 0.000164
10                0.001594
11                0.000986
12                0.000983
13                0.002813
14                0.000085
15                0.000992
16                0.000735
17                0.001989
18                0.000079
19                0.000036
20                0.001123
21                0.001433
22                0.001265
23                0.001675
24                0.001012
25                0.000005
26                0.000139
```

```
27              0.001758
28              0.001665
29              0.002127
30              0.002038
31              0.001667
32              0.001386
33              0.001227
34              0.000467
35              0.001882
36              0.001735
37              0.000003
38              0.000148
```

In [ ]: