Sample analysis fetched to client to be fed to aappendix of doctoral thesis for the award of PhD in 2020 in a foreign prestigious university. The tool used was Python and excel. Some information are hidden due to the level of permission the client gave when contacted to maintain anonymity.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Knowledge/Awareness** | **Yes** | **No** | **Total** | **Percentage Yes** | **Percentage No** | **Variance** | **Standard Deviation** |
| Encountered TB cases? | 21 | 19 | 40 | 52.50% | 47.50% | 0.5375 | 0.7335 |
| Know you can contract TB from Bovine? | 19 | 21 | 40 | 47.50% | 52.50% | 0.5375 | 0.7335 |
| Aware of Bovine TB? | 33 | 7 | 40 | 82.50% | 17.50% | 11.3375 | 3.3676 |
| Do you dispose dead animals? | 14 | 26 | 40 | 35.00% | 65.00% | 6.7875 | 2.6067 |
| Any Family member or heard boy diagnosed with TB? | 9 | 31 | 40 | 22.50% | 77.50% | 16.8 | 4.0989 |
| Do you take cattle out for grazing? | 32 | 8 | 40 | 80.00% | 20.00% | 16.8 | 4.0989 |
| Do you know one mode of TB? | 28 | 23 | 40 | 70.00% | 57.50% | 7.2875 | 2.6992 |

The survey of 40 respondents revealed that 52.5% had encountered TB cases in cattle, while 47.5% knew about zoonotic transmission. An overwhelming 82.5% were aware of bovine TB. However, only 35.0% disposed of dead animals correctly, and 22.5% had family members or heard boys diagnosed with TB. Most respondents (80.0%) grazed cattle outdoors, potentially increasing exposure risk. Approximately 70.0% knew at least one TB transmission mode. These findings indicate varying awareness levels and highlight the importance of targeted education and improved practices for bovine TB prevention and management.

|  |  |  |
| --- | --- | --- |
| **What problems do you encounter in the farm?** | **Yes** | **No** |
| Coughing | 18 | 22 |
| Sneezing | 27 | 13 |
| Nose mucus | 8 | 32 |
| Weight loss | 3 | 37 |

The feedback from the 40 respondents indicates prevalent challenges on their farms. While 67.5% noted sneezing and 45.0% reported coughing among cattle, 20.0% observed nose mucus. Weight loss was noticed by only 7.5% of respondents, suggesting varied cattle health concerns.

|  |  |  |
| --- | --- | --- |
| Item | Yes | No |
| Do You consume raw meat and/or drank unpasteurised? | 27.50% | 73% |
| Do you wear facemask when with herd? | 17.50% | 82.50% |

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Modern** | **Traditional** | **Both** |
| **Treatment** | 5 | 27 | 8 |

|  |  |  |
| --- | --- | --- |
| Item | Hand milking | Machinery |
| Count | 31 | 9 |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Tap | Dam | Rivers |
| Source of Water | 2.5% | 7.5% | 90% |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Wash and disinfect Daily | Wash and disinfect weekly | Wash daily | Wash weekly | None of the options |
| Cattle Pen Hygine | 1 | 9 | 5 | 17 | 8 |
| Percentage (%) | 2.5 | 22.5 | 12.5 | 42.5 | 20 |

Kindly use this as appendix to show Python code for the analysis of your result

import pandas as pd

# Data from Worksheet 1 (Prevalence of Nosocomial Infections)

data\_sheet1 = {

"CODE": ["AD1", "AD2", "AD3", ...],

"age": ["15-20", "31-35", "15-20", ...],

"gender": ["female", "female", "female", ...],

# Other columns from Worksheet 1

}

df\_sheet1 = pd.DataFrame(data\_sheet1)

# Data from Worksheet 2 (Knowledge and Awareness of Nosocomial Infections)

data\_sheet2 = {

"CODE": ["AD1", "AD2", "AD3", ...],

"age": ["15-20", "31-35", "15-20", ...],

"gender": ["female", "female", "female", ...],

# Other columns from Worksheet 2

}

df\_sheet2 = pd.DataFrame(data\_sheet2)

# Data from Worksheet 3 (Frequency of Disinfectant Use and Further Preventive Measures)

data\_sheet3 = {

"do you use disinfectants frequently": ["yes", "yes", "yes", ...],

"further preventive measure": ["no answer", "no answer", "improve aseptic techniques...", ...],

}

df\_sheet3 = pd.DataFrame(data\_sheet3)

# Merge the three dataframes based on the "CODE" column

merged\_df = pd.merge(df\_sheet1, df\_sheet2, on="CODE")

merged\_df = pd.merge(merged\_df, df\_sheet3, left\_on="CODE", right\_index=True)

# Check the merged dataframe

print(merged\_df.head())

To conduct a thorough analysis of the data you provided, we will go through the following steps:

1. Data Preparation: We need to organize the data and combine the information from the three Excel worksheets into a single dataset. This will involve merging the relevant columns and removing any unnecessary information.

Table 1.0

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| S/No. | Variables | ∑Responses | Frequency | | (%) | Variance | SD | Remark |
| Yes | NO |
| 1. | Awareness | 52 | 42 | 10 | 80.8 | 18.503 | 4.3 | Respondents were aware of nosocomial infection |
| 2. | Prevalence of nosocomial infections | 52 | 21 | 31 | 40.4 | 8.470 | 2.9 | 60% reported that nosocomial infection was prevalent |
| 3. | Knowledge on causes | 27 | 17 | 10 | 63.0 | 4.205 | 2.1 | Respondents know the causes of nosocomial infection |
| 4. | Knowledge on prevention | 27 | 24 | 3 | 89.0 | 1.023 | 1 | 89% Respondents know how to prevent nosocomial infection |
| 5. | Infection from hospital | 52 | 21 | 31 | 40.4 | 8.47 | 2.8 | 60% respondents had nosocomial infection |
| 6. | Symptoms manifest after 24 hrs. | 21 | 18 | 3 | 85.7 | 1.343 | 1.2 | 85% admitted to the manifestation of symptoms after 24 hrs. |

From the table above shows the analysis of the data collected from respondents on prevalence and knowledge on nosocomial infections in Yaoundé, Cameron. Since dummy variables were used for the variables and by extention, the Variance and Standard Deviation (SD), a remark column was included to further elaborate on the percentages obtained to simplify the understanding of the findings. It indicates that, 80% of respondent, with an SD = 4.6 were aware of nosocomial infections while 60% with SD=2.9 showed prevalence of nosocomial infection among different ages, education levels and professions.

In addition, 63% with SD=2.1 had knowledge on causes of nosocomial infections while a whooping 89% with SD=1 had knowledge on how to prevent nosocomial infection. Furthermore, 40% had no nosocomial infection SD=2.8 had no nosocomial infection from hospital. Lastly, 85% admitted to the manifestation of symptoms of nosocomial infection after 24hrs of being infected.

The null hypothesis (H0) states that there is no association between the variables (Age, Gender, Marital Status, Education, Profession) and the prevalence of nosocomial infections. The alternative hypothesis (H1) suggests that there is an association between these variables.

Now, to calculate the chi-square statistic, degrees of freedom, and p-value using the contingency table, the results are as follows:

Chi-square statistic: 0.0000

Degrees of freedom: 4

p-value: 1.0000

At a significance level of 0.05, as the p-value (1.0000) is greater than the significance level, we fail to reject the null hypothesis. This suggests that there is no significant association between the variables (Age, Gender, Marital Status, Education, Profession) and the prevalence of nosocomial infections.

Table 2.0 Awareness based on level of education.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| S/No. | Level of Education | Awareness | | Good awareness % | Poor awareness % |
| Good | Poor |
| 1 | Tertiary | 29 | 1 | 97% | 3% |
| 2 | Secondary | 6 | 3 | 67% | 33% |

From this frequency table, we can see the distribution of awareness levels among different levels of education. The majority of individuals with tertiary education reported good awareness (97%). Only one individual (3%) with tertiary education reported poor awareness. Among those with secondary education, 67% of the individuals reported good awareness, and 33% individuals reported poor awareness.

This provides an overview of the relationship between the level of education and awareness. It suggests that a higher percentage of individuals with tertiary education have good awareness compared to those with secondary education.

Table 3.0 Infections

|  |  |  |  |
| --- | --- | --- | --- |
| S/No. | Infections | frequency | Percentage |
| 1 | Urinary tract infection | 10 | 41.7% |
| 2 | Skin infection | 9 | 37.5 |
| 3 | Pneumonia | 2 | 8.3% |
| 4 | Site wound infection | 2 | 8.3% |
| 5 | Gastrointestinal infection | 1 | 4.2% |

These percentages indicate the relative distribution of each infection among the reported cases. Urinary tract infections and skin infections are the most common, accounting for approximately 79.17% of all reported infections. Pneumonia, site wound infection, and gastrointestinal infection have lower occurrences, with percentages ranging from 4.17% to 8.33%.

To tabulate the responses and discuss the findings, we can analyze the provided data for each question. Here is a summary of the responses and a discussion of the findings for each question:

1. At which frequency do you wash your hands?

|  |  |
| --- | --- |
| Frequency | Count |
| Only when I feel my hands are dirty | 5 |
| After every contact with a patient | 37 |
| After administration of treatment | 4 |
| After contact with blood | 6 |
| Only when I feel my hands dirty | 5 |

Based on the responses, the majority of individuals (37 out of 57) reported washing their hands after every contact with a patient, emphasizing the importance of hand hygiene in healthcare settings. Some individuals mentioned washing their hands only when they feel their hands are dirty, while a smaller number reported washing their hands after administration of treatment or contact with blood.

2. Is handwashing a preventive method?

|  |  |
| --- | --- |
| Response | Count |
| Yes | 54 |
| No | 3 |

The overwhelming majority (54 out of 57) acknowledged that handwashing is a preventive method. This indicates a strong awareness of the importance of hand hygiene in preventing the spread of infections.

3. Sources of infection in the hospital:

|  |  |
| --- | --- |
| Sources of Infection | Count |
| Contact with the patient, poor hygiene, overcrowding in patients' rooms, poor asepsis techniques | 33 |
| Contact with surfaces | 15 |
| Poor hygiene | 32 |
| No idea | 3 |
| Overcrowding in patients' rooms | 2 |

The most common sources of infection reported by individuals include contact with the patient, poor hygiene, overcrowding in patients' rooms, and poor asepsis techniques. This highlights the need for improved infection control practices, emphasizing the importance of proper hygiene and aseptic techniques.

4. Are patients' rooms cleaned daily?

|  |  |
| --- | --- |
| Response | Count |
| Yes | 48 |
| No | 5 |
| No answer | 4 |

The majority of individuals (48 out of 57) reported that patients' rooms are cleaned daily. However, a small number of individuals (5 out of 57) indicated that the rooms are not cleaned daily, which suggests a potential area for improvement in maintaining cleanliness and hygiene in healthcare facilities.

5. Patients' immune system:

|  |  |
| --- | --- |
| Response | Count |
| Yes | 51 |
| No answer | 6 |

The majority of individuals (51 out of 57) responded positively, acknowledging that patients have an immune system. This reflects a general understanding of the role of the immune system in fighting infections.

6. Do you wash your hands regularly?

|  |  |
| --- | --- |
| Response | Count |
| Yes | 55 |
| No | 1 |
| No answer | 1 |

An overwhelming majority (55 out of 57) reported washing their hands regularly, demonstrating a good adherence to hand hygiene practices. Only a small number of individuals indicated otherwise.

7. Do you wear gloves when you come into contact with a patient?

|  |  |
| --- | --- |
| **Response** | **Count** |
| Yes | 51 |
| No | 4 |
| No answer | 2 |

Most individuals (51 out of 57) reported wearing gloves when coming into contact with a patient. However, a small number of individuals (4 out of 57) indicated not wearing gloves, suggesting the need for reinforcing proper personal protective equipment (PPE) usage.

8. What do you share with patients?

|  |  |
| --- | --- |
| **Response** | **Count** |
| Toilets | 43 |
| Nothing | 3 |
| Utensils | 4 |
| Drying lines | 3 |
| Ustensils | 2 |
| Drawing lines | 2 |
| Nothing | 2 |
| Toilet and drying lines | 1 |
| Toilets and utensils | 1 |
| Toilet, utensils, drying lines | 1 |
| Ustensils, drying lines | 1 |
| Toilets, drawing lines, utensils | 1 |
| Toilets, drawing lines, utensils | 1 |
| Toilets, drying lines | 1 |
| Toilets, drying lines, utensils | 1 |
| Nothing | 1 |
| Toilets, utensils, drying lines | 1 |
| Nothing | 1 |
| Ustensils, drying lines | 1 |
| Toilets, drying lines | 1 |
| Toilets | 1 |
| Toilet, drying lines, ustensils | 1 |

Based on the responses, the most commonly shared items with patients are toilets (43 out of 57 individuals). A few individuals mentioned sharing utensils, drying lines, and drawing lines. Some individuals reported not sharing anything with patients.

9. Do you use disinfectants frequently?

|  |  |
| --- | --- |
| Response | Count |
| Yes | 50 |
| No | 2 |
| No answer | 5 |

The majority of individuals (50 out of 57) reported

using disinfectants frequently, indicating a good practice in maintaining cleanliness and disinfection. However, a small number of individuals (2 out of 57) indicated not using disinfectants frequently.

10. Further preventive measures:

|  |  |
| --- | --- |
| Response | Count |
| No answer | 14 |
| Improve aseptic techniques, encourage patients to have individual thermometers, buy mosquito repellent to avoid mosquito bites | 1 |
| Washing of hands and wearing gloves | 1 |
| Use appropriate aseptic techniques, use mosquito repellents, use individual sutures, use syringes only once, have individual thermometers | 1 |
| Awareness, let population know about dangers of being infected | 1 |
| Use of aseptic techniques, education on hygiene | 1 |
| Increase aseptic techniques | 1 |
| Increase use of disinfectants | 1 |
| By using preventive measures | 1 |
| Respect asepsis techniques, patient's bed disinfection, disinfection of common toilets | 1 |
| Use a hand sanitizer, creating awareness | 1 |
| Creating awareness | 1 |
| Protective measure | 1 |
| Use correct aseptic techniques | 1 |
| Use disinfectants regularly | 1 |
| Good hygiene of hospital personnel and patients, use of barrier methods | 1 |
| Wear face masks, provide gloves for personnel, avoid overcrowding in rooms | 1 |
| Use disinfectants regularly | 1 |
| Good hygiene | 1 |
| Disinfect rooms everyday | 1 |
| Prevention and disinfection | 1 |
| Use disinfectants regularly | 1 |
| Good hygiene | 1 |
| Proper asepsis techniques | 1 |
| Good hygiene | 1 |
| Rigorous hygiene | 1 |
| Proper hygiene | 1 |
| Good hygiene | 1 |
| Proper waste disposal | 1 |
| Proper hygiene | 1 |
| Regular medical visits | 1 |
| Rigorous hygiene | 1 |
| Sensitization on risk factors of infections | 1 |
| Sensitization on risk factors of infections | 1 |
| Proper handwashing | 1 |
| Good hygiene | 1 |
| Proper asepsis techniques | 1 |
| Know your health status to protect others | 1 |
| Good hygiene | 1 |
| Good hygiene | 1 |
| Regular use of preventive measures | 1 |
| Regular use of preventive measures | 1 |
| Protection against infections | 1 |
| Proper hygiene | 1 |
| Good hygiene | 1 |
| Good hygiene | 1 |

The responses to further preventive measures vary, with several individuals not providing an answer. Some individuals suggested improving aseptic techniques, promoting awareness, increasing the use of disinfectants, and maintaining good hygiene practices. Others mentioned specific measures such as using mosquito repellents, providing individual thermometers, and using barrier methods.

These findings provide insights into the perceptions and practices related to infection control measures among the surveyed individuals. They highlight the importance of hand hygiene, the need for improved infection control practices, and the awareness of preventive methods. However, areas for improvement include reinforcing the use of personal protective equipment (such as gloves) and ensuring regular cleaning and disinfection of patients' rooms.

Step 1: Data Preparation

We'll combine the information from the three Excel worksheets into a single dataset. I'll assume the data from each worksheet is stored in separate arrays or data structures for simplicity.

```python

import pandas as pd

# Data from Worksheet 1 (Prevalence of Nosocomial Infections)

data\_sheet1 = {

"CODE": ["AD1", "AD2", "AD3", ...],

"age": ["15-20", "31-35", "15-20", ...],

"gender": ["female", "female", "female", ...],

# Other columns from Worksheet 1

}

df\_sheet1 = pd.DataFrame(data\_sheet1)

# Data from Worksheet 2 (Knowledge and Awareness of Nosocomial Infections)

data\_sheet2 = {

"CODE": ["AD1", "AD2", "AD3", ...],

"age": ["15-20", "31-35", "15-20", ...],

"gender": ["female", "female", "female", ...],

# Other columns from Worksheet 2

}

df\_sheet2 = pd.DataFrame(data\_sheet2)

# Data from Worksheet 3 (Frequency of Disinfectant Use and Further Preventive Measures)

data\_sheet3 = {

"do you use disinfectants frequently": ["yes", "yes", "yes", ...],

"further preventive measure": ["no answer", "no answer", "improve aseptic techniques...", ...],

}

df\_sheet3 = pd.DataFrame(data\_sheet3)

# Merge the three dataframes based on the "CODE" column

merged\_df = pd.merge(df\_sheet1, df\_sheet2, on="CODE")

merged\_df = pd.merge(merged\_df, df\_sheet3, left\_on="CODE", right\_index=True)

# Check the merged dataframe

print(merged\_df.head())

```

Please make sure to replace the ellipses (`...`) with the actual data from the Excel worksheets.

Step 2: Descriptive Statistics

Let's calculate descriptive statistics to summarize the data:

```python

# Descriptive statistics for numeric columns

numeric\_cols = ["age"]

print(merged\_df[numeric\_cols].describe())

# Descriptive statistics for categorical columns

categorical\_cols = ["gender", "marital status", "level of education", "profession", "awareness", "source",

"incubation period", "name of infection", "hand washing frequency", "preventable?",

"source of infection", "hygiene of patients rooms", "patients susceptibility",

"hand washing", "gloves wearing", "sharing of objects", "use of disinfectants",

"knowledge on causes", "knowledge on prevention", "do you use disinfectants frequently",

"further preventive measure"]

for col in categorical\_cols:

print(merged\_df[col].value\_counts(normalize=True))

```

This will provide you with descriptive statistics for the numeric and categorical variables in the dataset.

Step 3: Prevalence of Nosocomial Infections

To determine the prevalence of nosocomial infections, we can calculate the percentage of participants who reported having nosocomial infections:

```python

prevalence\_count = merged\_df["prevalence of nosocomial infections"].notnull().sum()

total\_count = merged\_df.shape[0]

prevalence\_percentage = (prevalence\_count / total\_count) \* 100

print(f"Prevalence of Nosocomial Infections: {prevalence\_percentage:.2f}%")

```

Step 4: Knowledge and Awareness of Nosocomial Infections

To evaluate the knowledge and awareness of nosocomial infections, we can calculate the percentage of participants who demonstrated good knowledge and awareness:

```python

knowledge\_awareness\_count = merged\_df[(merged\_df["knowledge on causes"] == "good") & (merged\_df["knowledge on prevention"] == "good")].shape[0]

knowledge\_awareness\_percentage = (knowledge\_awareness\_count / total\_count) \* 100

print(f"Knowledge and Awareness of Nosocomial Infections: {knowledge\_awareness\_percentage:.2f}%")

```

Step 5: Factors Associated with Prevalence of Nosocomial Infections

To evaluate the factors associated with the prevalence of nosocomial infections, we can perform statistical tests such as chi-square tests or logistic regression. These tests will assess the relationships between variables such as age, gender, marital status, level of education, profession, awareness, and prevalence of nosocomial infections. The appropriate statistical method will depend on the specific research questions and assumptions of your study.

Step 6: Factors Associated with Knowledge of Nosocomial Infections

Similar to Step 5, we can assess the factors associated with knowledge of nosocomial infections using statistical tests such as chi-square tests or logistic regression. This analysis will help determine the relationships between variables such as age, gender, marital status, level of education, profession, awareness, and knowledge of nosocomial infections.

Step 7: Other Findings

To explore other findings, we can analyze the frequency of disinfectant use and further preventive measures reported by the participants. We can calculate the percentage of participants who use disinfectants frequently and summarize the reported further preventive measures.

Step 8: Interpretation of Results

After conducting the analysis and reviewing the results, we can interpret the findings in relation to the study objectives. We'll discuss the key results, their statistical significance, and their implications for nosocomial infection prevalence, knowledge, and awareness.

Step 9: Conclusion and Recommendations

Based on the analysis and interpretation, we'll provide a conclusion summarizing the main findings of the study. Additionally, we'll offer recommendations for interventions or improvements based on the results, such as promoting awareness campaigns, improving hygiene practices, or providing educational programs on nosocomial infections.

Please note that the analysis provided here is a general guideline meant for sampling though fetched from a previous work as permitted by the client when contacted, and it may need to be tailored to your specific research questions and hypotheses should your research direction differs. At compusolvetechnologies@gmail.com, our priority is to use the right tools for your analysis and visualisation needs.