Cholera Study Analysis

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# loading data

# importing the data   
cholera\_data<- import( here("data/cholera\_data\_.csv")) %>%  
 clean\_names()  
  
# changing the data.frame into tibble object for easy handling   
cholera\_data<- tibble(cholera\_data)  
  
  
  
# filtering out those less than 18 years   
cholera\_data<-cholera\_data %>%   
 filter(age\_group!="<18")  
  
  
ta\_shapefile<-st\_read(  
 here("data/MWI\_adm1.shp")  
) %>%   
 select(  
 NAME\_1,  
 ID\_0,  
 ID\_1) %>%   
 dplyr::rename(  
 "District"= NAME\_1  
 )

## Reading layer `MWI\_adm1' from data source   
## `/Users/alex/Documents/GitHub/R\_Projects/Cholera\_study\_project\_2024/data/MWI\_adm1.shp'   
## using driver `ESRI Shapefile'  
## Simple feature collection with 28 features and 9 fields  
## Geometry type: MULTIPOLYGON  
## Dimension: XY  
## Bounding box: xmin: 32.67152 ymin: -17.12721 xmax: 35.91505 ymax: -9.363796  
## Geodetic CRS: WGS 84

# Social and behavioral factors that influence current water treatment practices

## Source of Water for Daily use by District

## Awareness of the Health Risk Associated with drinking untreated Water by Sex, Age-Group, Level of Education, and District

awareness\_of\_heathRisk<-cholera\_data %>%   
 select(  
 sex,   
 age\_group,   
 level\_education,   
 district,  
 zone,  
 health\_risk\_associated\_with\_drinking\_untreated\_water  
 )  
  
  
table2<-awareness\_of\_heathRisk %>%   
 select(-district , -zone) %>%   
 tbl\_summary(health\_risk\_associated\_with\_drinking\_untreated\_water,  
 percent = "row",  
 digits = list(  
 sex ~ c(0, 2),  
 age\_group ~ c(0, 2),  
 level\_education ~ c(0, 2)  
 ))  
  
  
  
table2 <- table2 %>%   
 as\_flex\_table()  
  
  
save\_as\_docx(table2, path = here("output/table2.docx"))  
  
  
  
  
sum(str\_detect(cholera\_data$ta, "TA"))

## [1] 792

# tbale of the Zone and District   
  
  
table3<-awareness\_of\_heathRisk %>%   
 mutate(district=recode(  
 district,   
 "Blantyre\_City"="Blantyre"  
 )) %>%   
 select(district , zone, health\_risk\_associated\_with\_drinking\_untreated\_water) %>%   
 tbl\_summary(health\_risk\_associated\_with\_drinking\_untreated\_water,  
 percent = "row",  
 digits = list(  
 district~ c(0, 2),  
 zone ~ c(0, 2)  
 ))  
  
  
table3 <- table3 %>%   
 as\_flex\_table()  
  
  
save\_as\_docx(table3, path = here("output/table3.docx"))

## 2.3. 0 Main sources of drinking water during the dry season by District/ Township

## 2.4. 0 Main sources of drinking water during the wet season by District

## 2.5.1 Water Treatment at Household by Sex, Level of Education, Religion

## 2.5.2 Water Treatment at Household by District

## 2.5.3 if yes, Methods of water treatment by District

##2.5.4 Properly chlorination process by district.

## 2.5. 5 Frequency of water treatment by Sex, Level of Education, Religion

## 2. 5.6 Access to water treatment by district

## 2. 6.0 Knowledge of cholera calendar year. By Sex, Level of Education, Religion

## 2. 7. 0 Knowledge of the potential Cause of Cholera.

## 2.8. 0 Knowledge of the Prevention Measures of cholera by Sex, Level of Education and Religious Belief.

## 2.8. 0 Knowledge of the Prevention Measures of cholera by District

## 2. 9.0 Current local measures or campaigns in place to prevent cholera outbreaks by Districts

# Social and cultural behavior determinants of vaccine uptake

## 3.1. 0 Aware of Cholera Vaccine by Age- Group, Sex Level of Education, and 3.1. 1 Aware of Cholera Vaccine by District and Zone ?? whcih variable is this? ignore the code below

table3.1.0 <- cholera\_data |>   
 select(ocv\_prevent\_cholera,age\_group,sex,level\_education) %>%   
 tbl\_summary(ocv\_prevent\_cholera,  
 percent = "row",  
 digits = list(  
 sex ~ c(0, 2),  
 age\_group ~ c(0, 2),  
 level\_education ~ c(0, 2)  
 ))  
  
  
   
table3.1.0 <- table3.1.0 %>%   
 as\_flex\_table()  
  
  
save\_as\_docx( table3.1.0, path = here("output/table3\_1\_0.docx"))  
  
  
table3.1.1 <- cholera\_data |>   
 select(ocv\_prevent\_cholera,district,zone) %>%   
 tbl\_summary(ocv\_prevent\_cholera,  
 percent = "row",  
 digits = list(  
 district~ c(0, 2),  
 zone ~ c(0, 2)  
 ))  
  
  
   
table3.1.1 <- table3.1.1 %>%   
 as\_flex\_table()  
  
  
save\_as\_docx( table3.1.1, path = here("output/table3\_1\_1.docx"))

## 3.2.0 Believe Cholera Vaccine Prevent Cholera by Sex, Level of Education

table3.2.0 <- cholera\_data |>   
 select(ocv\_prevent\_cholera,age\_group,sex,level\_education) %>%   
 tbl\_summary(ocv\_prevent\_cholera,  
 percent = "row",  
 digits = list(  
 sex ~ c(0, 2),  
 age\_group ~ c(0, 2),  
 level\_education ~ c(0, 2)  
 ))  
  
  
   
table3.2.0 <- table3.2.0 %>%   
 as\_flex\_table()  
  
  
save\_as\_docx( table3.2.0, path = here("output/table3\_2\_0.docx"))

## 3.2.1 Believe Cholera Vaccine Prevent District and Zone

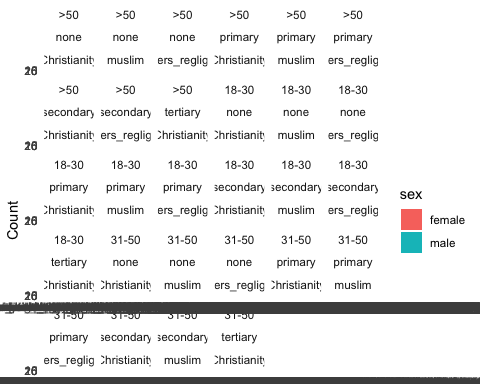
table3.2.1 <- cholera\_data |>   
 select(ocv\_prevent\_cholera,district,zone) %>%   
 tbl\_summary(ocv\_prevent\_cholera,  
 percent = "row",  
 digits = list(  
 district~ c(0, 2),  
 zone ~ c(0, 2)  
 ))  
  
  
   
table3.2.1 <- table3.2.1 %>%   
 as\_flex\_table()  
  
  
save\_as\_docx( table3.2.1, path = here("output/table3\_2\_1.docx"))

##3.3. 0 Information about Cholera Vaccine by Sex, Age Group, Education, Religion

df\_summary <- cholera\_data %>%  
 select(sex, age\_group, level\_education, religion, ocv\_information) %>%  
 filter(!is.na(ocv\_information)) %>% # Exclude missing values  
 group\_by(sex, age\_group, level\_education, religion, ocv\_information) %>%  
 summarise(count = n(), .groups = "drop") %>%  
 mutate(percentage = (count / sum(count)) \* 100)  
  
# Print summary table  
print(df\_summary)

## # A tibble: 507 × 7  
## sex age\_group level\_education religion ocv\_information count percentage  
## <chr> <chr> <chr> <chr> <chr> <int> <dbl>  
## 1 female 18-30 none Christiani… communication\_… 1 0.126  
## 2 female 18-30 none Christiani… healthcare\_pro… 2 0.252  
## 3 female 18-30 none Christiani… healthcare\_pro… 1 0.126  
## 4 female 18-30 none Christiani… healthcare\_pro… 1 0.126  
## 5 female 18-30 none Christiani… healthcare\_pro… 1 0.126  
## 6 female 18-30 none Christiani… radio communit… 1 0.126  
## 7 female 18-30 none muslim radio 2 0.252  
## 8 female 18-30 none others\_reg… healthcare\_pro… 1 0.126  
## 9 female 18-30 primary Christiani… communication\_… 4 0.503  
## 10 female 18-30 primary Christiani… communication\_… 1 0.126  
## # ℹ 497 more rows

# Create a bar plot to visualize the distribution  
ggplot(df\_summary, aes(x = ocv\_information, y = count, fill = sex)) +  
 geom\_bar(stat = "identity", position = "dodge") +  
 facet\_wrap(~age\_group + level\_education + religion) +  
 labs(title = "Information about Cholera Vaccine by Demographics",  
 x = "Received Information about OCV",  
 y = "Count") +  
 theme\_minimal()



## 3.3. 1 Information about Cholera Vaccine by District and Zone

table3.2.1 <- cholera\_data |>   
 select(ocv\_prevent\_cholera,district,zone) %>%   
 tbl\_summary(ocv\_prevent\_cholera,  
 percent = "row",  
 digits = list(  
 district~ c(0, 2),  
 zone ~ c(0, 2)  
 ))  
  
  
   
table3.2.1 <- table3.2.1 %>%   
 as\_flex\_table()  
  
  
save\_as\_docx( table3.2.1, path = here("output/table3\_2\_1.docx"))

## 3. 4. 0 Safe of Cholera Vaccine by Sex Age Group Education and Religion

##3. 4. 1 Safe of Cholera Vaccine by District and Zone

## 3. 5. 0 Community Influence decision about vaccination by District and Zone

## 3. 6. 0 Difficult in access cholera vaccination by Sex, Education and Religion

## 3. 6. 1 Difficult in access cholera vaccination by District

##3. 7. 0 OCV status by Sex, Age Group, Education and Religious

## 3. 7. 0 OCV status by District and Zone

## 3. 8. 0 Family Members vaccinated by District and Zone

## 3. 9. 0 Willingness to get vaccinated in the Future OCV by Sex, Age Group and Education

## 3. 9. 1 Willingness to get vaccinated in the Future OCV by District and Zone

## 3. 10. 0 Recommend a Family member to get vaccinated by District and Zone

## 3. 13. 0 Prefer ways to Receive Information about Vaccine by Sex, Age Group and Education and Religious

## 3. 13. 1 Prefer ways to Receive Information about Vaccine by District and Zone