Biostat HW2 Prob 6

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Problem 6

A researcher is conducting a study to examine associations of depression and cognitive performance with migraine symptoms. Use data from the Human Epilepsy Project (HEP) to answer the following questions.

Migraine status 0-no, 1-yes NDDIE: Neurological Disorder Depression Inventory for Epilepsy CESD: Center for Epidemiologic Studies Depression Scale Cognitive evaluation: Aldenkamp-Baker

```
migraine_recode =
  migraine_data %>%
  mutate(cesd_geq16 = ifelse(cesd >= 16, 'yes', 'no'),
         nddie_geq16 = ifelse(nddie >= 16, 'yes', 'no'))
```

(a) Summarize the three variables above for epilepsy patients with and without migraine. Carefully choose the descriptive statistics and report both measures of location/spread, sample sizes (N) and number of missing values for each variable. For NDDIE and CSED, use the original scores and the following cutoffs: NDDIE (cutoff of 16), CSED (cutoff of 16).

CESD summary

```
migraine_data %>%
  group_by(migraine) %>%
  summarise(n_cesd = table(migraine),
            avg_cesd = mean(cesd, na.rm = T),
            quartile_25 = quantile(cesd, na.rm = T)[2],
            median = median(cesd, na.rm = T),
            quartile_75 = quantile(cesd, na.rm = T)[4],
            sd = sd(cesd, na.rm = T))
```

```
## # A tibble: 2 x 7
##   migraine n_cesd      avg_cesd quartile_25 median quartile_75    sd
##   <chr>    <S3: table>    <dbl>       <dbl>  <dbl>       <dbl> <dbl>
## 1 no       337             10.7           3      8          14  10.3
## 2 yes      " 82"           14.4           6     11          20  11.5
```

NDDIE summary

```
migraine_data %>%
  group_by(migraine) %>%
  summarise(n_nddie = table(migraine),  # number of subjects per group
            avg_cesd = mean(nddie, na.rm = T),  # mean CESD
            quartile_25 = quantile(nddie, na.rm = T)[2],
            median = median(nddie, na.rm = T),
            quartile_75 = quantile(nddie, na.rm = T)[4],
            sd = sd(nddie, na.rm = T))
```

```
## # A tibble: 2 x 7
##   migraine n_nddie     avg_cesd quartile_25 median quartile_75    sd
##   <chr>    <S3: table>    <dbl>       <dbl>  <dbl>       <dbl> <dbl>
## 1 no       337             10.3           6      9          13  4.49
## 2 yes      " 82"           11.4           8     11          14  4.36
```

summary with binary variable

```
migraine_recode %>%
  mutate(cesd_binary = recode(cesd_geq16, 'yes' = 1, 'no' = 0)) %>%
  group_by(migraine) %>%
  summarise(sum(cesd_binary, na.rm = T))
```

```
## # A tibble: 2 x 2
##   migraine `sum(cesd_binary, na.rm = T)`
##   <chr>                           <dbl>
## 1 no                                 62
## 2 yes                                26
```

```
prop.table(table(Migraine = migraine_recode$migraine,
      'CESD >= 16' = migraine_recode$cesd_geq16), margin = 1)
```

```
##         CESD >= 16
## Migraine        no       yes
##      no  0.7737226 0.2262774
##      yes 0.6486486 0.3513514
```

```
table(Migraine = migraine_recode$migraine,
      'NNDIE >= 16' = migraine_recode$nddie_geq16)
```

```
##         NNDIE >= 16
## Migraine  no yes
##      no  234  39
##      yes  62  11
```

NDDIE summary

```
migraine_data %>%
  group_by(migraine) %>%
  summarise(n_nddie = table(migraine),  # number of subjects per group
            avg_cesd = mean(nddie, na.rm = T),  # mean CESD
            quartile_25 = quantile(nddie, na.rm = T)[2],
            median = median(nddie, na.rm = T),
            quartile_75 = quantile(nddie, na.rm = T)[4],
            sd = sd(nddie, na.rm = T))
```

```
## # A tibble: 2 x 7
##   migraine n_nddie     avg_cesd quartile_25 median quartile_75    sd
##   <chr>    <S3: table>    <dbl>       <dbl>  <dbl>       <dbl> <dbl>
## 1 no       337             10.3           6      9          13  4.49
## 2 yes      " 82"           11.4           8     11          14  4.36
```

Create graphical displays to show the scores distributions for NDDIE, CSED, ABNAS (memory and language) by group (migraine vs no-migraine). Please add your recommendations / comments. (5p)