Contents

0.1 R Markdown

0.1.1 Initiation possible Statistical Analysis for Infertility Perception

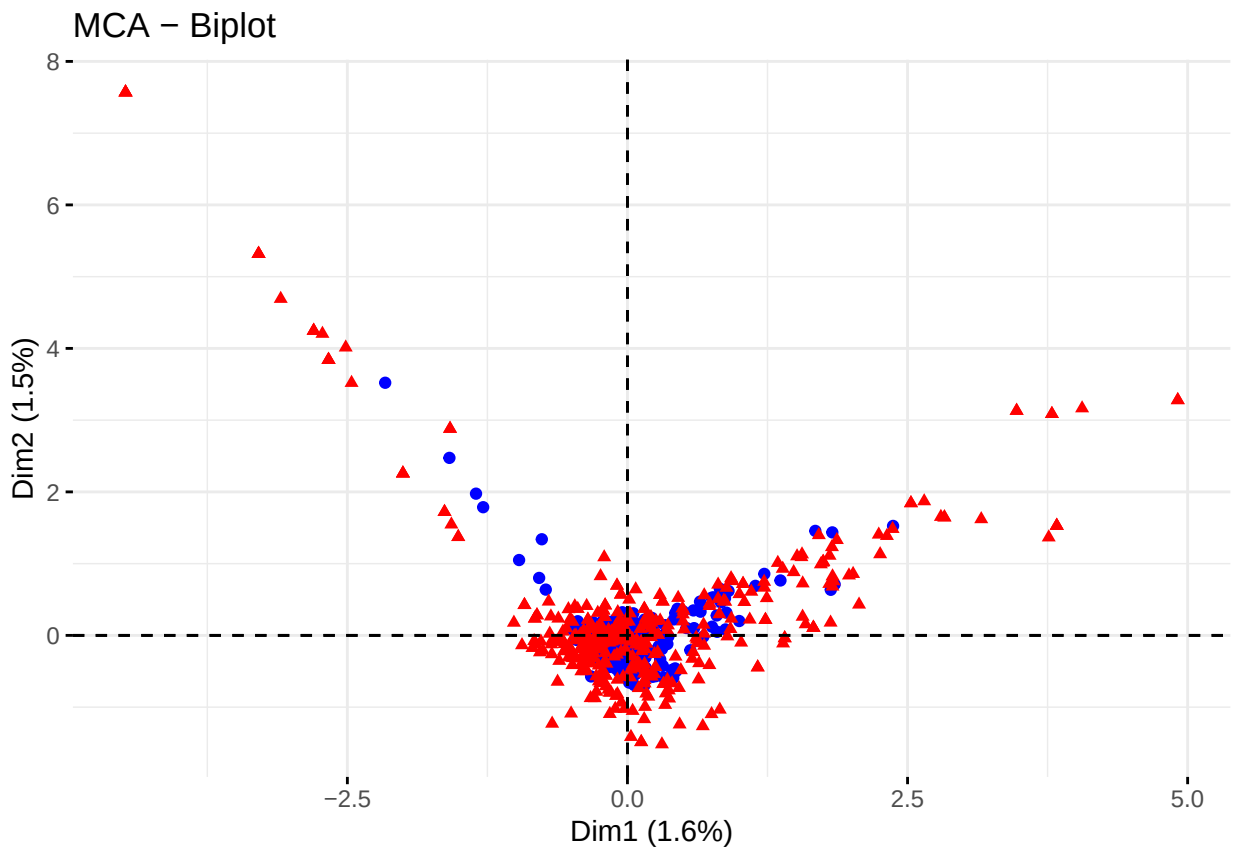
0.2 Including Plots and Tables of Interest

```
Perception_propt%>%count(SECTION.A..SOCIO.DEMOGRAPHIC)%>%
  mutate(P_Value=
              recode(SECTION.A..SOCIO.DEMOGRAPHIC,"26-35"="<0.001",
                     "36-45"="<0.001","<25 years"="<0.001",">45"="<0.001"))
```

```
##   SECTION.A..SOCIO.DEMOGRAPHIC   n P_Value
## 1                        26-35  90  <0.001
## 2                        36-45 100  <0.001
## 3                    <25 years  37  <0.001
## 4                          >45  31  <0.001
```

0.2.1 **Multiple Correspondence Analysis (MCA) of respondent to identify similarities or differences

```
# Multiple Correspondence Analysis (MCA)

Perception_propt[,c(2:26)]%>%MCA(ncp=2,graph=FALSE)%>%
  fviz_mca_biplot(geom="point",repel=TRUE,ggtheme=theme_minimal())
```



0.3 **Again: preliminary test analysis

```
# Preliminary socio-demographics

newdat<-Perception_propt%>%mutate(Duration_infertility=
    X6..Duration.of.infertility,yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))

Perception_propt%>%mutate(Duration_infertility=
  X6..Duration.of.infertility,yes_no=ifelse(
  Duration_infertility=="Nil","Fertile","Infertile"))%>%group_by(yes_no)%>%
  count(age=SECTION.A..SOCIO.DEMOGRAPHIC)%>%
  pivot_wider(names_from = age,values_from = n)%>%
  column_to_rownames(var="yes_no")%>%mutate(p_value="=0.04")
```

```
##           26-35 36-45 <25 years >45 p_value
## Fertile      30    24        13   3   =0.04
## Infertile    60    76        24  28   =0.04
```

```
# Logistic Regression Analysis
glm(factor(yes_no)~SECTION.A..SOCIO.DEMOGRAPHIC+X2..Gender+X5..Level.of.education,data = newdat,family =
```

```
##
## Call:
```

```
## glm(formula = factor(yes_no) ~ SECTION.A..SOCIO.DEMOGRAPHIC +
##     X2..Gender + X5..Level.of.education, family = "binomial",
##     data = newdat)
##
## Deviance Residuals:
##     Min       1Q   Median       3Q      Max
## -2.1778  -1.2387   0.6834   0.8658   1.1173
##
## Coefficients:
##                                  Estimate Std. Error z value Pr(>|z|)
## (Intercept)                        0.7749     1.1855   0.654  0.51331
## SECTION.A..SOCIO.DEMOGRAPHIC>45    2.3021     0.7605   3.027  0.00247 **
## SECTION.A..SOCIO.DEMOGRAPHIC26-35  0.5185     0.4528   1.145  0.25214
## SECTION.A..SOCIO.DEMOGRAPHIC36-45  1.0660     0.4726   2.255  0.02411 *
## X2..GenderMale                    -0.6452     0.3341  -1.931  0.05344 .
## X5..Level.of.educationPrimary      0.2293     1.4395   0.159  0.87343
## X5..Level.of.educationSecondary    0.4325     1.2606   0.343  0.73155
## X5..Level.of.educationTertiary    -0.5053     1.2004  -0.421  0.67381
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## (Dispersion parameter for binomial family taken to be 1)
##
##     Null deviance: 301.64  on 257  degrees of freedom
## Residual deviance: 284.83  on 250  degrees of freedom
## AIC: 300.83
##
## Number of Fisher Scoring iterations: 4
```

0.3.1 Final

```
Do_Know_Infertility_Start_1Year<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
  yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%
  count(age=X7..Do.you.know.that.infertility.starts.to.count.after.1.year.of.unprotected.sexual.interco
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("0.32",""))

Who_Can_Infertile<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
  yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=X8..Who.do.you.think.can.be.infertile)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("0.74","",""))

Who_is_To_Blamed<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
         yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=X9..Who.is.being.blamed.for.infertility)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("0.03","","",""))
```

```
Primary_Infertility_Can_Affect_Who<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
  yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=X10..Primary.infertility.can.affect.who)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(Fertile=str_replace_na(Fertile,"0"))%>%
  mutate(p_value=c("0.55","",""))
Primary_Infertility_Can_Affect_Who$Fertile<-as.integer(Primary_Infertility_Can_Affect_Who$Fertile)

Secondary_Infertility_can_Affect_Who<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
 yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=X11..Secondary.infertility.can.affect.who)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("0.50","",""))


Can_Infertility_Treated<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
         yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=X14..Do.you.think.infertility.can.and.should.be.treated.medically.)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("0.60","",""))

Causes_of_Infertility<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
         yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=X15..Who.do.you.think.should.go.for.laboratory.investigation.before.trea
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(Fertile=str_replace_na(Fertile,"0"),p_value=c("0.48","",""))
Causes_of_Infertility$Fertile<-as.integer(Causes_of_Infertility$Fertile)

Whom_Would_You_Goto<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
         yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=X16..Whom.would.you.go.to.for.your.treatment.)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(Fertile=str_replace_na(Fertile,"0"),
                                         p_value=c("0.27","","","",""))
Whom_Would_You_Goto$Fertile<-as.integer(Whom_Would_You_Goto$Fertile)

Social_Acceptability_to_Abortion<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
         yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=X19..Do.you.think.it.is.socially.acceptable.to.have.a.baby.through.surro
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("0.015","",""))

Social_Acceptability_to_IVF<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
         yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=X20..Do.you.think.it.is.socially.acceptable.to.have.a.baby.through.In.vi
  pivot_wider(names_from = yes_no,values_from = n)%>%
```

```
  column_to_rownames(var="age")%>%mutate(p_value=c("0.90","",""))

Negativity_Infertility_on_Gender<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
         yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=X21..Infertility.has.more.negative.effect.on.who.more.)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("0.02","",""))


Social_Effect_of_Infertility_On_Gathering<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
         yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=X23..Do.staying.in.a.gathering.with.people.who.have.a.child.or.children.a
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("0.43","",""))


bind_rows(Do_Know_Infertility_Start_1Year=Do_Know_Infertility_Start_1Year,
          Who_Can_Infertile=Who_Can_Infertile,
          Who_is_To_Blamed=Who_is_To_Blamed,
          Primary_Infertility_Can_Affect_Who=Primary_Infertility_Can_Affect_Who,
          Secondary_Infertility_can_Affect_Who=Secondary_Infertility_can_Affect_Who,
          Can_Infertility_Treated=Can_Infertility_Treated,
          Causes_of_Infertility=Causes_of_Infertility,
          Whom_Would_You_Goto=Whom_Would_You_Goto,
          Social_Acceptability_to_Abortion=Social_Acceptability_to_Abortion,
          Social_Acceptability_to_IVF=Social_Acceptability_to_IVF,
          Negativity_Infertility_on_Gender=Negativity_Infertility_on_Gender,
          Social_Effect_of_Infertility_On_Gathering=Social_Effect_of_Infertility_On_Gathering,
          .id = "Variable")
```

```
##                                                 Variable Fertile
## No...1                        Do_Know_Infertility_Start_1Year      27
## Yes...2                       Do_Know_Infertility_Start_1Year      46
## Both men and women...3                   Who_Can_Infertile      64
## Men...4                                  Who_Can_Infertile       2
## Women...5                                Who_Can_Infertile       7
## Both Husband and wife                     Who_is_To_Blamed      22
## Husband                                   Who_is_To_Blamed       1
## Neither Husband or wife                   Who_is_To_Blamed      10
## Wife                                      Who_is_To_Blamed      40
## Both men and wome           Primary_Infertility_Can_Affect_Who      60
## Women...11                  Primary_Infertility_Can_Affect_Who      13
## Men...12                    Primary_Infertility_Can_Affect_Who       0
## Both men and women...13   Secondary_Infertility_can_Affect_Who      57
## Men...14                  Secondary_Infertility_can_Affect_Who       3
## Women...15                Secondary_Infertility_can_Affect_Who      13
## No...16                             Can_Infertility_Treated       3
## Not sure...17                       Can_Infertility_Treated       9
## Yes...18                            Can_Infertility_Treated      61
## Both men and women...19               Causes_of_Infertility      69
## Women...20                            Causes_of_Infertility       4
```

```
## Men...21                                  Causes_of_Infertility       0
## Faith healers                               Whom_Would_You_Goto       1
## Gynaecologist                               Whom_Would_You_Goto      65
## Herbalist                                   Whom_Would_You_Goto       1
## Others:                                     Whom_Would_You_Goto       6
## Self treatment                              Whom_Would_You_Goto       0
## No...27                          Social_Acceptability_to_Abortion      36
## Not sure...28                    Social_Acceptability_to_Abortion      14
## Yes...29                         Social_Acceptability_to_Abortion      23
## No...30                               Social_Acceptability_to_IVF      10
## Not sure...31                         Social_Acceptability_to_IVF      17
## Yes...32                              Social_Acceptability_to_IVF      46
## Both men and women...33          Negativity_Infertility_on_Gender      23
## Men...34                         Negativity_Infertility_on_Gender       4
## Women...35                       Negativity_Infertility_on_Gender      46
## No...36                 Social_Effect_of_Infertility_On_Gathering      14
## Not sure...37           Social_Effect_of_Infertility_On_Gathering      15
## Yes...38                Social_Effect_of_Infertility_On_Gathering      44
##                         Infertile p_value
## No...1                         88    0.32
## Yes...2                        97
## Both men and women...3        167    0.74
## Men...4                         3
## Women...5                      15
## Both Husband and wife          67    0.03
## Husband                         2
## Neither Husband or wife         5
## Wife                          111
## Both men and wome             154    0.55
## Women...11                     27
## Men...12                        4
## Both men and women...13       144    0.50
## Men...14                        3
## Women...15                     38
## No...16                         5    0.60
## Not sure...17                  19
## Yes...18                      161
## Both men and women...19       170    0.48
## Women...20                     10
## Men...21                        5
## Faith healers                   5    0.27
## Gynaecologist                 171
## Herbalist                       1
## Others:                         5
## Self treatment                  3
## No...27                       105   0.015
## Not sure...28                  52
## Yes...29                       28
## No...30                        23    0.90
## Not sure...31                  44
## Yes...32                      118
## Both men and women...33        88    0.02
## Men...34                        2
## Women...35                     95
```

```
## No...36                          24    0.43
## Not sure...37                    39
## Yes...38                        122
```

0.3.2 Table 2, 3, and 4

```
age<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),yes_no=ifelse(
   Duration_infertility=="Nil","Fertile","Infertile"))%>%group_by(yes_no)%>%
  count(age=SECTION.A..SOCIO.DEMOGRAPHIC)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("=0.04","","","",""))

Gender<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),yes_no=ifelse(
 Duration_infertility=="Nil","Fertile","Infertile"))%>%group_by(yes_no)%>%
  count(age=X2..Gender)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("0.58",""))

Religion<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),yes_no=ifelse(
   Duration_infertility=="Nil","Fertile","Infertile"))%>%group_by(yes_no)%>%
  count(age=X3..Religion)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("0.51",""))

Occupation<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),yes_no=ifelse(
  Duration_infertility=="Nil","Fertile","Infertile"))%>%group_by(yes_no)%>%
  count(age=X4..Occupation)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(Fertile=str_replace_na(Fertile,"0"))%>%
  mutate(p_value=c("=0.03","","","","","",""))
Occupation$Fertile<-as.integer(Occupation$Fertile)
Occupation$Infertile<-as.integer(Occupation$Infertile)

Level_Education<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),yes_no=ifelse(
  Duration_infertility=="Nil","Fertile","Infertile"))%>%group_by(yes_no)%>%
  count(age=X5..Level.of.education)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%mutate(p_value=c("0.48","","",""))

Duration_of_Infertility<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
  yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  group_by(yes_no)%>%count(age=Duration_infertility)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="age")%>%
  mutate(Fertile=str_replace_na(Fertile,"0"),
  Infertile=str_replace_na(Infertile,"0"))%>%
```

```
  mutate(p_value=c("<0.001","","","",""))
Duration_of_Infertility$Fertile<-as.integer(Duration_of_Infertility$Fertile)
Duration_of_Infertility$Infertile<-as.integer(Duration_of_Infertility$Infertile)
  Fertile<-as.integer(Duration_of_Infertility$Fertile)
bind_rows(Age=age,
      Gender=Gender,
      Religion=Religion,Occupation=Occupation,Level_Education=Level_Education,
      Duration_of_Infertility=Duration_of_Infertility,.id = "Variable")
```

```
##                                          Variable Fertile Infertile p_value
## 26-35                                         Age      30        60   =0.04
## 36-45                                         Age      26        74
## <25 years                                     Age      13        24
## >45                                           Age       4        27
## Female                                     Gender      46       124    0.58
## Male                                       Gender      27        61
## Christian                                 Religion      42        95    0.51
## Muslim                                    Religion      31        90
## Civil servant                           Occupation       2         4   =0.03
## Civil servant: Public sector            Occupation      18        64
## Private sector                          Occupation      31        50
## Self employed                           Occupation      13        42
## Student                                 Occupation       6         9
## Unemployed                              Occupation       3        16
## Informal                           Level_Education       1         3    0.48
## Primary                            Level_Education       2         7
## Secondary                          Level_Education       6        30
## Tertiary                           Level_Education      64       145
## Nil                          Duration_of_Infertility      73         0  <0.001
## 1-5 years                    Duration_of_Infertility       0       104
## 11-15 years                  Duration_of_Infertility       0        17
## 16-20 years                  Duration_of_Infertility       0        10
## 6-10 years                   Duration_of_Infertility       0        54
```

```
# Table 2 Knowledge and common misconceptions about factors that
# may affect sterility

# Common missconception about infertility
Common_MisConcept_About_Infertility<-Perception_propt%>%
  separate(X13..Common.misconception.about.the.causes.of.infertility...Tick.as.many.as.apply.,c("an1","a
  select(an1,an2,an3,an4)%>%head(10)
```

```
## Warning: Expected 4 pieces. Additional pieces discarded in 10 rows [19, 26, 36, 51, 58,
## 59, 124, 173, 237, 238].
```

```
## Warning: Expected 4 pieces. Missing pieces filled with `NA` in 202 rows [3, 4, 5, 6, 7,
## 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 23, 25, 27, ...].
```

```
Common_MisConcept_About_Infertility
```

```
##             an1          an2                           an3
```

```
## 1       Natural    Spiritual                    Black magic
## 2  Supernatural    Spiritual                    Black magic
## 3     Spiritual         <NA>                           <NA>
## 4     Spiritual  Black magic Curses by ancestors or deities
## 5       Natural Supernatural                      Spiritual
## 6       Natural    Spiritual                    Black magic
## 7     Spiritual  Black magic Curses by ancestors or deities
## 8       Natural Supernatural                    Black magic
## 9     Spiritual  Black magic        Curses from individuals
## 10    Spiritual  Black magic                           <NA>
##                               an4
## 1  Curses by ancestors or deities
## 2  Curses by ancestors or deities
## 3                            <NA>
## 4                            <NA>
## 5                            <NA>
## 6                            <NA>
## 7                            <NA>
## 8  Curses by ancestors or deities
## 9                            <NA>
## 10                           <NA>
```

```
# Causes of Infertility Known by Respondent

Causes_Infertility_Known<-Perception_propt%>%
  separate(X12..What.are.the.causes.of.infertility.that.you.know..Tick.as.many.as.apply.,c("an1","an2",'
  select(an1,an2,an3,an4,an5,an6,an7,an8,an9,an10,an11)%>%head(10)
```

```
## Warning: Expected 11 pieces. Missing pieces filled with `NA` in 245 rows [3, 5, 6, 7, 8,
## 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, ...].
```

```
Causes_Infertility_Known
```

```
##                            an1                                          an2
## 1    Hormonal imbalance in Men                   Hormonal imbalance in women
## 2  Hormonal imbalance in women History of infection of genital tract in women
## 3    Hormonal imbalance in Men                   Hormonal imbalance in women
## 4    Hormonal imbalance in Men                   Hormonal imbalance in women
## 5    Hormonal imbalance in Men                   Hormonal imbalance in women
## 6  Hormonal imbalance in women  History of infection of genital tract  in men
## 7    Hormonal imbalance in Men                   Hormonal imbalance in women
## 8    Hormonal imbalance in Men                   Hormonal imbalance in women
## 9    Hormonal imbalance in men                   Hormonal imbalance in women
## 10   Hormonal imbalance in men                   Hormonal imbalance in women
##                                          an3
## 1   History of infection of genital tract  in men
## 2                                     Smoking
## 3   History of infection of genital tract  in men
## 4   History of infection of genital tract  in men
## 5   History of infection of genital tract  in men
## 6  History of infection of genital tract in women
## 7   History of infection of genital tract  in men
## 8   History of infection of genital tract  in men
```

```
## 9   History of infection of genital tract  in men
## 10  History of infection of genital tract  in men
##                                             an4
## 1  History of infection of genital tract in women
## 2                            Environmental factor
## 3  History of infection of genital tract in women
## 4  History of infection of genital tract in women
## 5  History of infection of genital tract in women
## 6                                        Smoking
## 7  History of infection of genital tract in women
## 8  History of infection of genital tract in women
## 9  History of infection of genital tract in women
## 10 History of infection of genital tract in women
##                                       an5                          an6
## 1                                  Smoking         Environmental factor
## 2  Use of family planning device by women         Psychological stress
## 3                                  Smoking         Environmental factor
## 4  Use of family planning device by women         Psychological stress
## 5                    Environmental factor         Psychological stress
## 6  Use of family planning device by women         Psychological stress
## 7  Use of family planning device by women         Psychological stress
## 8  Use of family planning device by women Obesity in both men and wome
## 9                             Blocked tube                        Drugs
## 10 Use of family planning device by women        Natural (will of God)
##                              an7                          an8
## 1          Psychological stress Obesity in both men and wome
## 2  Obesity in both men and wome        Natural (will of God)
## 3  Obesity in both men and wome                 Blocked tube
## 4  Obesity in both men and wome        Natural (will of God)
## 5  Obesity in both men and wome        Natural (will of God)
## 6  Obesity in both men and wome        Natural (will of God)
## 7  Obesity in both men and wome        Natural (will of God)
## 8         Natural (will of God)       Rhesus incompatibility
## 9                           <NA>                         <NA>
## 10                Blocked tube                        Drugs
##                        an9         an10  an11
## 1   Natural (will of God) Blocked tube Drugs
## 2  Rhesus incompatibility Blocked tube Drugs
## 3                   Drugs         <NA>  <NA>
## 4  Rhesus incompatibility Blocked tube Drugs
## 5            Blocked tube         <NA>  <NA>
## 6  Rhesus incompatibility Blocked tube  <NA>
## 7            Blocked tube        Drugs  <NA>
## 8            Blocked tube        Drugs  <NA>
## 9                    <NA>         <NA>  <NA>
## 10                   <NA>         <NA>  <NA>
```

```
# Awareness of Hormonal Laboratory Investigation in Treatment of Infertility

Awareness_of_Hormonal_Laboratory_Investigation<-Perception_propt%>%
  separate(X17..Are.you.aware.of.these.hormonal.laboratory.investigations.that.can.be.conducted.for.inf
  select(an1,an2,an3,an4,an5,an6,an7)%>%head(10)
```

```
## Warning: Expected 7 pieces. Missing pieces filled with `NA` in 227 rows [1, 2, 3, 4, 6,
```

```
## 8, 9, 10, 11, 12, 13, 15, 16, 18, 19, 20, 21, 22, 23, 24, ...].
```

```
Awareness_of_Hormonal_Laboratory_Investigation
```

```
##                                 an1                                an2
## 1            Leutinizing Hormone (LH)                          Prolactin
## 2  Follicle Stimulating Hormone (FSH)                          Prolactin
## 3            Leutinizing Hormone (LH) Follicle Stimulating Hormone (FSH)
## 4  Follicle Stimulating Hormone (FSH)                           Estrogen
## 5            Leutinizing Hormone (LH) Follicle Stimulating Hormone (FSH)
## 6            Leutinizing Hormone (LH) Follicle Stimulating Hormone (FSH)
## 7            Leutinizing Hormone (LH) Follicle Stimulating Hormone (FSH)
## 8            Leutinizing Hormone (LH) Follicle Stimulating Hormone (FSH)
## 9            Leutinizing Hormone (LH) Follicle Stimulating Hormone (FSH)
## 10           Leutinizing Hormone (LH) Follicle Stimulating Hormone (FSH)
##             an3          an4          an5                          an6
## 1      Estrogen Progesterone Testosterone Anti-Mullerian hormone (AMH)
## 2      Estrogen Progesterone Testosterone                         <NA>
## 3     Prolactin     Estrogen Progesterone                Testosterone
## 4  Progesterone         <NA>         <NA>                         <NA>
## 5     Prolactin     Estrogen Progesterone                Testosterone
## 6     Prolactin Testosterone         <NA>                         <NA>
## 7     Prolactin     Estrogen Progesterone                Testosterone
## 8      Estrogen Progesterone Testosterone                         <NA>
## 9          <NA>         <NA>         <NA>                         <NA>
## 10    Prolactin     Estrogen Progesterone                Testosterone
##                            an7
## 1                         <NA>
## 2                         <NA>
## 3                         <NA>
## 4                         <NA>
## 5  Anti-Mullerian hormone (AMH)
## 6                         <NA>
## 7  Anti-Mullerian hormone (AMH)
## 8                         <NA>
## 9                         <NA>
## 10                        <NA>
```

```
Feeling_After_Failing_Conception<-Perception_propt%>%
  separate(X22..How.do.you.feel.when.you.are.not.able.to.conceive.after.1.year.of.unprotected.sexual.in
  select(an1,an2,an3,an4,an5)%>%head(10)
```

```
## Warning: Expected 5 pieces. Missing pieces filled with `NA` in 247 rows [1, 2, 3, 4, 6,
## 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 20, 21, 22, 23, 24, ...].
```

```
Feeling_After_Failing_Conception
```

```
##          an1       an2      an3      an4              an5
## 1        Sad Depressed  Anxious Distress             <NA>
## 2        Sad Depressed  Anxious Distress             <NA>
## 3    Anxious      <NA>     <NA>     <NA>             <NA>
## 4        Sad Depressed  Anxious Distress             <NA>
```

```
## 5        Sad Depressed  Anxious Distress Suicidal thought
## 6        Sad   Anxious     <NA>     <NA>             <NA>
## 7        Sad Depressed  Anxious Distress             <NA>
## 8  Depressed      <NA>     <NA>     <NA>             <NA>
## 9        Sad Depressed  Anxious Distress             <NA>
## 10       Sad   Anxious Distress     <NA>             <NA>
```

0.3.3 Table on the knowledge of the various treatment option available (18)

```
#Treatment Options Known to respondence

Treatment_Options_Know<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
  yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  separate(X18..What.type.of.treatment.options.do.you.know..Tick.as.many.as.apply.,c("an1","an2","an3",
  select(an1,an2,an3,an4,an5,an6,an7,yes_no)
```

```
## Warning: Expected 7 pieces. Additional pieces discarded in 19 rows [1, 3, 5, 8, 14, 20,
## 25, 40, 53, 131, 136, 152, 156, 161, 192, 198, 203, 240, 247].
```

```
## Warning: Expected 7 pieces. Missing pieces filled with `NA` in 223 rows [2, 6, 7, 9, 10,
## 11, 12, 13, 15, 16, 17, 18, 19, 22, 23, 24, 26, 27, 28, 29, ...].
```

```
# Treatment option of first respondence


treat1<-Treatment_Options_Know%>%group_by(yes_no)%>%
  count(an1)%>%pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="an1")%>%
  mutate(Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.16","","","","",""))
 treat1$Fertile<-as.integer(treat1$Fertile)
 treat1$Infertile<-as.integer(treat1$Infertile)

 treat2<-Treatment_Options_Know%>%
   group_by(yes_no)%>%
   count(an2)%>%
   pivot_wider(names_from = yes_no,values_from = n)%>%
   mutate(an2=str_replace_na(an2,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
          Infertile=str_replace_na(Infertile,"0"),p_value=c("0.23","","","","","","",""))%>%
   column_to_rownames(var="an2")
 treat2$Fertile<-as.integer(treat2$Fertile)
 treat2$Infertile<-as.integer(treat2$Infertile)

 treat3<-Treatment_Options_Know%>%
   group_by(yes_no)%>%
   count(an3)%>%
   pivot_wider(names_from = yes_no,values_from = n)%>%
   mutate(an3=str_replace_na(an3,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
          Infertile=str_replace_na(Infertile,"0"),p_value=c("0.03","","","","","","",""))%>%
   column_to_rownames(var="an3")
```

```
treat3$Fertile<-as.integer(treat3$Fertile)
treat3$Infertile<-as.integer(treat3$Infertile)

treat4<-Treatment_Options_Know%>%
  group_by(yes_no)%>%
  count(an4)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an4=str_replace_na(an4,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.14","","","","","",""))%>%
  column_to_rownames(var="an4")
treat4$Fertile<-as.integer(treat4$Fertile)
treat4$Infertile<-as.integer(treat4$Infertile)

treat5<-Treatment_Options_Know%>%
  group_by(yes_no)%>%
  count(an5)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an5=str_replace_na(an5,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.14","","","","","",""))%>%
  column_to_rownames(var="an5")
treat5$Fertile<-as.integer(treat5$Fertile)
treat5$Infertile<-as.integer(treat5$Infertile)

treat6<-Treatment_Options_Know%>%
  group_by(yes_no)%>%
  count(an6)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an6=str_replace_na(an6,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.52","","","","","",""))%>%
  column_to_rownames(var="an6")
treat6$Fertile<-as.integer(treat6$Fertile)
treat6$Infertile<-as.integer(treat6$Infertile)

treat7<-Treatment_Options_Know%>%
  group_by(yes_no)%>%
  count(an7)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an7=str_replace_na(an7,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.04","","","","",""))%>%
  column_to_rownames(var="an7")
treat7$Fertile<-as.integer(treat7$Fertile)
treat7$Infertile<-as.integer(treat7$Infertile)
bind_rows(ans_1=treat1,ans_2=treat2,ans_3=treat3,
          ans_4=treat4,ans_5=treat5,ans_6=treat6,ans_7=treat7,.id = "Variables")
```

```
##                                          Variables Fertile Infertile p_value
## In-vito fertilization (IVF)...1              ans_1       7        14    0.16
## Intra uterine insemination (IUI)...2         ans_1       2         0
## Intracytoplasmic sperm injection (ICS)...3   ans_1       1         0
## Sperm donor...4                              ans_1       2         6
## Use of medication (Hormonal drugs)           ans_1      61       164
## Surrogacy...6                                ans_1       0         1
## In-vito fertilization (IVF)...7              ans_2      45       133    0.23
```

```
## Laparascopic/hysteroscopic surgery...8          ans_2       2         1
## Ova donor...9                                   ans_2       2         3
## Sperm donor...10                                ans_2       8        15
## Surrogacy...11                                  ans_2       2         2
## Varicocelectomy...12                            ans_2       1         0
## Not Selected...13                               ans_2      13        30
## Intra uterine insemination (IUI)...14           ans_2       0         1
## Intracytoplasmic sperm injection (ICS)...15     ans_3       2         0    0.03
## Laparascopic/hysteroscopic surgery...16         ans_3       2        14
## Ova donor...17                                  ans_3       6        13
## Sperm donor...18                                ans_3      34        56
## Surrogacy...19                                  ans_3       8        29
## Not Selected...20                               ans_3      21        62
## Intra uterine insemination (IUI)...21           ans_3       0         1
## Varicocelectomy...22                            ans_3       0        10
## Intra uterine insemination (IUI)...23           ans_4       4         6    0.14
## Laparascopic/hysteroscopic surgery...24         ans_4       2        17
## Ova donor...25                                  ans_4      22        41
## Ovarian stimulation...26                        ans_4       1         0
## Surrogacy...27                                  ans_4      13        25
## Varicocelectomy...28                            ans_4       1         9
## Not Selected...29                               ans_4      30        87
## Intra uterine insemination (IUI)...30           ans_5       5        10    0.14
## Intracytoplasmic sperm injection (ICS)...31     ans_5       2         0
## Laparascopic/hysteroscopic surgery...32         ans_5       1        13
## Surrogacy...33                                  ans_5      20        34
## Not Selected...34                               ans_5      45       121
## Ovarian stimulation...35                        ans_5       0         1
## Varicocelectomy...36                            ans_5       0         6
## Intra uterine insemination (IUI)...37           ans_6      13        20    0.52
## Laparascopic/hysteroscopic surgery...38         ans_6       3         5
## Ovarian stimulation...39                        ans_6       2         3
## Not Selected...40                               ans_6      55       149
## Intracytoplasmic sperm injection (ICS)...41     ans_6       0         1
## Tubal surgeries                                 ans_6       0         1
## Varicocelectomy...43                            ans_6       0         6
## Intra uterine insemination (IUI)...44           ans_7       2         3    0.04
## Intracytoplasmic sperm injection (ICS)...45     ans_7       7         2
## Laparascopic/hysteroscopic surgery...46         ans_7       2         6
## Varicocelectomy...47                            ans_7       2        11
## Not Selected...48                               ans_7      60       163
```

```
# Table 2 Knowledge and common misconceptions about factors that may affect sterility

# Common misconception about infertility
Common_MisConcept_About_Infertility<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"), yes_no=ifelse(Duration_
  separate(X13..Common.misconception.about.the.causes.of.infertility...Tick.as.many.as.apply.,c("an1","a
  select(an1,an2,an3,an4,yes_no)
```

```
## Warning: Expected 4 pieces. Additional pieces discarded in 10 rows [19, 26, 36, 51, 58,
## 59, 124, 173, 237, 238].
```

```
## Warning: Expected 4 pieces. Missing pieces filled with `NA` in 202 rows [3, 4, 5, 6, 7,
```

```
## 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 21, 23, 25, 27, ...].
```

```
trt1<-Common_MisConcept_About_Infertility%>%group_by(yes_no)%>%
  count(an1)%>%pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="an1")%>%
  mutate(Fertile=str_replace_na(Fertile,"0"),Infertile=str_replace_na(Infertile,"0"),p_value=c("0.10","
trt1$Fertile<-as.integer(trt1$Fertile)
trt1$Infertile<-as.integer(trt1$Infertile)

trt2<-Common_MisConcept_About_Infertility%>%
  group_by(yes_no)%>%
  count(an2)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an2=str_replace_na(an2,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),Infertile=str_repla
trt2$Fertile<-as.integer(trt2$Fertile)
trt2$Infertile<-as.integer(trt2$Infertile)

trt3<-Common_MisConcept_About_Infertility%>%
  group_by(yes_no)%>%
  count(an3)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an3=str_replace_na(an3,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),Infertile=str_repla
trt3$Fertile<-as.integer(trt3$Fertile)
trt3$Infertile<-as.integer(trt3$Infertile)

trt4<-Common_MisConcept_About_Infertility%>%
  group_by(yes_no)%>%
  count(an4)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an4=str_replace_na(an4,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),Infertile=str_repla
trt4$Fertile<-as.integer(trt4$Fertile)
trt4$Infertile<-as.integer(trt4$Infertile)

Misconception_Infertility<-bind_rows(ans_1=trt1,ans_2=trt2,ans_3=trt3,
ans_4=trt4,.id = "Variables")

Misconception_Infertility
```

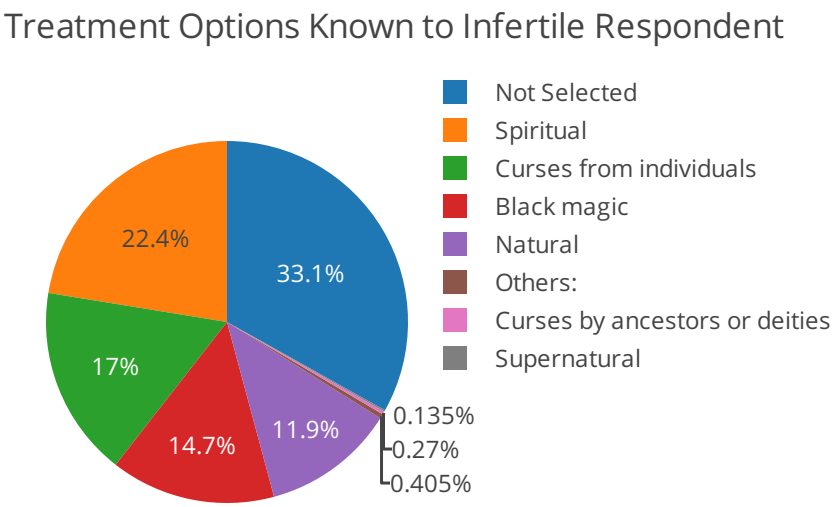
```
##                                  Variables Fertile Infertile p_value
## Black magic...1                      ans_1       3         5    0.10
## Curses from individuals...2          ans_1       2         3
## Natural                              ans_1      38        88
## Others:...4                          ans_1       1         0
## Spiritual...5                        ans_1      28        89
## Supernatural...6                     ans_1       1         0
## Black magic...7                      ans_2      18        58    0.06
## Curses from individuals...8          ans_2      10        32
## Others:...9                          ans_2       1         0
## Spiritual...10                       ans_2      29        76
## Supernatural...11                    ans_2       1         1
## Not Selected...12                    ans_2      14        18
## Black magic...13                     ans_3      26        46    0.45
## Curses from individuals...14         ans_3      13        61
## Others:...15                         ans_3       2         0
```

```
## Not Selected...16                       ans_3      32        75
## Curses by ancestors or deities...17     ans_3       0         2
## Spiritual...18                          ans_3       0         1
## Curses by ancestors or deities...19     ans_4       3         0    0.31
## Curses from individuals...20            ans_4      19        30
## Others:...21                            ans_4       1         3
## Not Selected...22                       ans_4      50       152
```

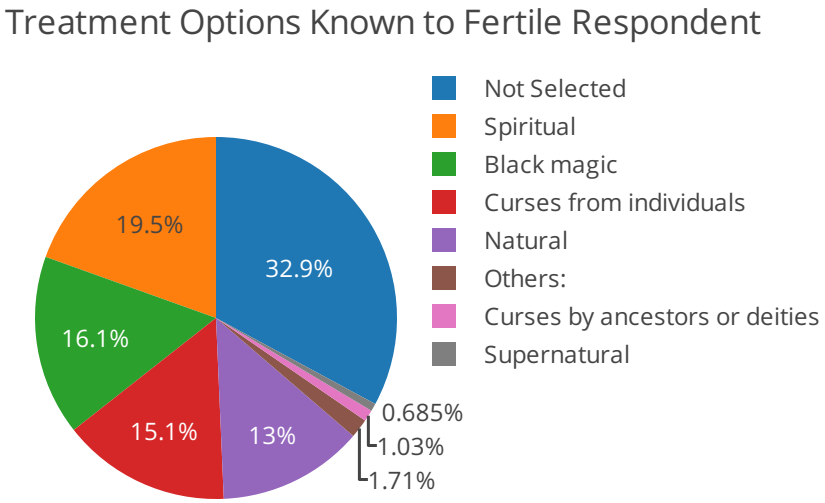
```
circles1<-Misconception_Infertility%>%rownames_to_column("Treatment_Option")%>%select(-Variables,-p_valu
  summarise(Fertile=sum(Fertile),Infertile=sum(Infertile))

library(plotly)
```

```
##
## Attaching package: 'plotly'

## The following object is masked from 'package:ggplot2':
##
##     last_plot

## The following object is masked from 'package:stats':
##
##     filter

## The following object is masked from 'package:graphics':
##
##     layout
```

```
library(ggpubr)
fig <- plot_ly(circles1, labels = ~Treatment_Option, values = ~Infertile, type = 'pie')
fig1 <- fig %>% layout(title = 'Treatment Options Known to Infertile Respondent', xaxis = list(showgrid

fig1
```




```
figa <- plot_ly(circles1, labels = ~Treatment_Option, values = ~Fertile, type = 'pie')
fig <- figa %>% layout(title = 'Treatment Options Known to Fertile Respondent',xaxis = list(showgrid = I
fig
```




```
### **Causes of Infertility Known by Respondent**

Causes_Infertility_Known<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
 yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  separate(X12..What.are.the.causes.of.infertility.that.you.know..Tick.as.many.as.apply.,c("an1","an2",
  select(an1,an2,an3,an4,an5,an6,an7,an8,an9,an10,an11,yes_no)
```

```
## Warning: Expected 11 pieces. Missing pieces filled with `NA` in 245 rows [3, 5, 6, 7, 8,
## 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 25, ...].
```

```
treta1<-Causes_Infertility_Known%>%group_by(yes_no)%>%
  count(an1)%>%pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="an1")%>%
  mutate(Fertile=str_replace_na(Fertile,"0"),
  Infertile=str_replace_na(Infertile,"0"),p_value=c("<0.001","","","","","","","","","",""))
treta1$Fertile<-as.integer(treta1$Fertile)
treta1$Infertile<-as.integer(treta1$Infertile)

treta2<-Causes_Infertility_Known%>%
  group_by(yes_no)%>%
  count(an2)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an2=str_replace_na(an2,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),
```

```
        p_value=c("0.62","","","","","","","","",""))%>%column_to_rownames(var="an2")
treta2$Fertile<-as.integer(treta2$Fertile)
treta2$Infertile<-as.integer(treta2$Infertile)

treta3<-Causes_Infertility_Known%>%
  group_by(yes_no)%>%
  count(an3)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an3=str_replace_na(an3,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("<0.21","","","","","","","","","",""))%>%
  column_to_rownames(var="an3")
treta3$Fertile<-as.integer(treta3$Fertile)
treta3$Infertile<-as.integer(treta3$Infertile)

# Error in fisher.test(.) :
#  FEXACT error 7(location). LDSTP=18600 is too small for this problem,
# (pastp=39.6896, ipn_0:=ipoin[itp=336]=4340, stp[ipn_0]=39.0949).
# Increase workspace or consider using 'simulate.p.value=TRUE'

treta4<-Causes_Infertility_Known%>%
  group_by(yes_no)%>%
  count(an4)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an4=str_replace_na(an4,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.09","","","","","","","","",""))%>%
  column_to_rownames(var="an4")
treta4$Fertile<-as.integer(treta4$Fertile)
treta4$Infertile<-as.integer(treta4$Infertile)

treta5<-Causes_Infertility_Known%>%
  group_by(yes_no)%>%
  count(an5)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an5=str_replace_na(an5,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.09","","","","","","","",""))%>%
  column_to_rownames(var="an5")
treta5$Fertile<-as.integer(treta5$Fertile)
treta5$Infertile<-as.integer(treta5$Infertile)

treta6<-Causes_Infertility_Known%>%
  group_by(yes_no)%>%
  count(an6)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an6=str_replace_na(an6,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.26","","","","","","","",""))%>%
  column_to_rownames(var="an6")
treta6$Fertile<-as.integer(treta6$Fertile)
treta6$Infertile<-as.integer(treta6$Infertile)

treta7<-Causes_Infertility_Known%>%
  group_by(yes_no)%>%
  count(an7)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
```

```
  mutate(an7=str_replace_na(an7,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.39","","","","","",""))%>%
  column_to_rownames(var="an7")
treta7$Fertile<-as.integer(treta7$Fertile)
treta7$Infertile<-as.integer(treta7$Infertile)

treta8<-Causes_Infertility_Known%>%
  group_by(yes_no)%>%
  count(an8)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an8=str_replace_na(an8,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.15","","","","","",""))%>%
  column_to_rownames(var="an8")
treta8$Fertile<-as.integer(treta8$Fertile)
treta8$Infertile<-as.integer(treta8$Infertile)

treta9<-Causes_Infertility_Known%>%
  group_by(yes_no)%>%
  count(an9)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an9=str_replace_na(an9,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.19","","","",""))%>%
  column_to_rownames(var="an9")
treta9$Fertile<-as.integer(treta9$Fertile)
treta9$Infertile<-as.integer(treta9$Infertile)

treta10<-Causes_Infertility_Known%>%
  group_by(yes_no)%>%
  count(an10)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an10=str_replace_na(an10,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.02","",""))%>%
  column_to_rownames(var="an10")
treta10$Fertile<-as.integer(treta10$Fertile)
treta10$Infertile<-as.integer(treta10$Infertile)

treta11<-Causes_Infertility_Known%>%
  group_by(yes_no)%>%
  count(an11)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an11=str_replace_na(an11,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.53",""))%>%
  column_to_rownames(var="an11")
treta11$Fertile<-as.integer(treta11$Fertile)
treta11$Infertile<-as.integer(treta11$Infertile)



Known_cause<-bind_rows(ans_1=treta1,ans_2=treta2,ans_3=treta3,
                           ans_4=treta4,ans_5=treta5,ans_6=treta6,ans_7=treta7,
                           ans_8=treta8,ans_9=treta9,ans_10=treta10,
                           ans_11=treta11,.id = "Variables")
```

```
Known_cause
```

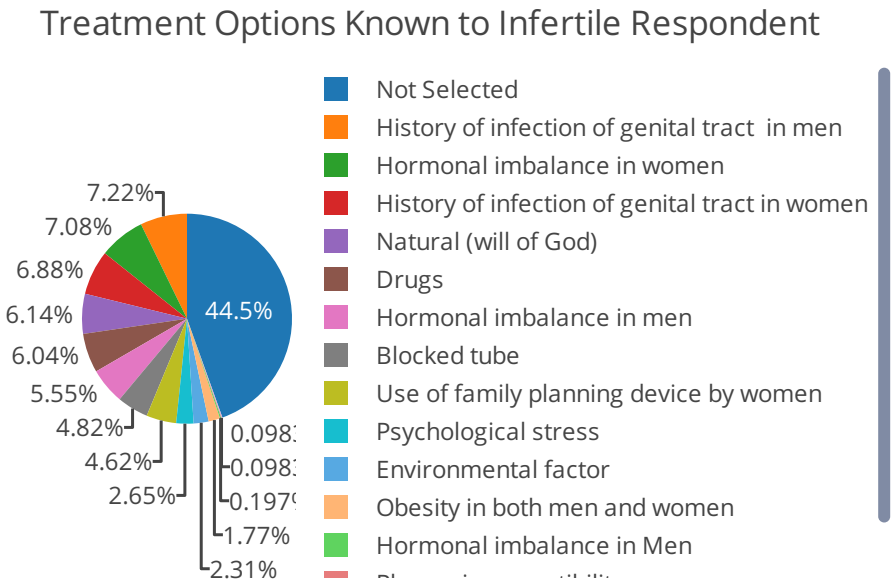
```
##                                                Variables Fertile Infertile
## Environmental factor...1                           ans_1       1         1
## History of infection of genital tract  in men...2  ans_1       6        29
## History of infection of genital tract in women...3 ans_1       2         1
## Hormonal imbalance in Men                          ans_1       2         4
## Hormonal imbalance in men                          ans_1      46       113
## Hormonal imbalance in women...6                    ans_1       9        29
## Natural (will of God)...7                          ans_1       4         3
## Psychological stress...8                           ans_1       1         1
## Use of family planning device by women...9         ans_1       2         1
## Blocked tube...10                                  ans_1       0         2
## Drugs...11                                         ans_1       0         1
## Drugs...12                                         ans_2       1         1
## Environmental factor...13                          ans_2       1         2
## History of infection of genital tract  in men...14 ans_2       6        27
## History of infection of genital tract in women...15 ans_2      11        26
## Hormonal imbalance in women...16                   ans_2      46       115
## Natural (will of God)...17                         ans_2       1         3
## Use of family planning device by women...18        ans_2       1         2
## Not Selected...19                                  ans_2       6         6
## Blocked tube...20                                  ans_2       0         2
## Obesity in both men and women...21                 ans_2       0         1
## Drugs...22                                         ans_3       1         4
## Environmental factor...23                          ans_3       3        12
## History of infection of genital tract  in men...24 ans_3      40        91
## History of infection of genital tract in women...25 ans_3      8        25
## Natural (will of God)...26                         ans_3       2        19
## Obesity in both men and women...27                 ans_3       2         1
## Psychological stress...28                          ans_3       1         1
## Smoking...29                                       ans_3       1         0
## Use of family planning device by women...30        ans_3       8        16
## Not Selected...31                                  ans_3       7        13
## Blocked tube...32                                  ans_3       0         3
## Blocked tube...33                                  ans_4       3         4
## Drugs...34                                         ans_4       1        16
## Environmental factor...35                          ans_4       3        10
## History of infection of genital tract in women...36 ans_4      39        88
## Natural (will of God)...37                         ans_4       5        13
## Obesity in both men and women...38                 ans_4       1         2
## Psychological stress...39                          ans_4       9         9
## Use of family planning device by women...40        ans_4       4        17
## Not Selected...41                                  ans_4       8        25
## Smoking...42                                       ans_4       0         1
## Blocked tube...43                                  ans_5       4        11
## Drugs...44                                         ans_5       4        12
## Environmental factor...45                          ans_5      13        21
## Natural (will of God)...46                         ans_5       7        31
## Obesity in both men and women...47                 ans_5       9         5
## Psychological stress...48                          ans_5       6        12
## Smoking...49                                       ans_5       1         1
## Use of family planning device by women...50        ans_5      16        41
```

```
## Not Selected...51                                    ans_5      13        51
## Blocked tube...52                                    ans_6      10        24
## Drugs...53                                           ans_6       4        15
## Environmental factor...54                            ans_6       1         1
## Natural (will of God)...55                           ans_6      15        24
## Obesity in both men and wome...56                    ans_6       1         0
## Obesity in both men and women...57                   ans_6       5         6
## Psychological stress...58                            ans_6       7        18
## Use of family planning device by women...59          ans_6      10        17
## Not Selected...60                                    ans_6      20        80
## Blocked tube...61                                    ans_7      14        21
## Drugs...62                                           ans_7       8        24
## Natural (will of God)...63                           ans_7       4        13
## Obesity in both men and wome...64                    ans_7       1         5
## Obesity in both men and women...65                   ans_7       5         8
## Psychological stress...66                            ans_7      10        13
## Not Selected...67                                    ans_7      31       101
## Blocked tube...68                                    ans_8       4        13
## Drugs...69                                           ans_8      11        21
## Natural (will of God)...70                           ans_8       7        12
## Obesity in both men and wome...71                    ans_8       1         0
## Obesity in both men and women...72                   ans_8       7         8
## Rhesus incompatibility...73                          ans_8       1         0
## Not Selected...74                                    ans_8      42       131
## Blocked tube...75                                    ans_9       9         9
## Drugs...76                                           ans_9       4        14
## Natural (will of God)...77                           ans_9       5         7
## Rhesus incompatibility...78                          ans_9       1         2
## Not Selected...79                                    ans_9      54       153
## Blocked tube...80                                   ans_10       6         9
## Drugs...81                                          ans_10       9         7
## Not Selected...82                                   ans_10      58       169
## Drugs...83                                          ans_11       5         8
## Not Selected...84                                   ans_11      68       177
##                                                   p_value
## Environmental factor...1                           <0.001
## History of infection of genital tract  in men...2
## History of infection of genital tract in women...3
## Hormonal imbalance in Men
## Hormonal imbalance in men
## Hormonal imbalance in women...6
## Natural (will of God)...7
## Psychological stress...8
## Use of family planning device by women...9
## Blocked tube...10
## Drugs...11
## Drugs...12                                           0.62
## Environmental factor...13
## History of infection of genital tract  in men...14
## History of infection of genital tract in women...15
## Hormonal imbalance in women...16
## Natural (will of God)...17
## Use of family planning device by women...18
## Not Selected...19
```

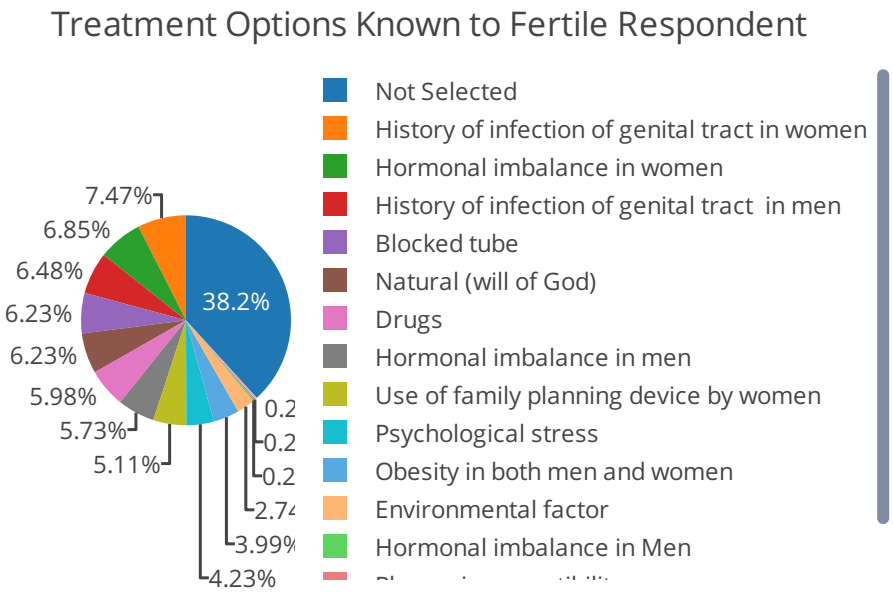
```
## Blocked tube...20
## Obesity in both men and women...21
## Drugs...22                                          <0.21
## Environmental factor...23
## History of infection of genital tract  in men...24
## History of infection of genital tract in women...25
## Natural (will of God)...26
## Obesity in both men and women...27
## Psychological stress...28
## Smoking...29
## Use of family planning device by women...30
## Not Selected...31
## Blocked tube...32
## Blocked tube...33                                    0.09
## Drugs...34
## Environmental factor...35
## History of infection of genital tract in women...36
## Natural (will of God)...37
## Obesity in both men and women...38
## Psychological stress...39
## Use of family planning device by women...40
## Not Selected...41
## Smoking...42
## Blocked tube...43                                    0.09
## Drugs...44
## Environmental factor...45
## Natural (will of God)...46
## Obesity in both men and women...47
## Psychological stress...48
## Smoking...49
## Use of family planning device by women...50
## Not Selected...51
## Blocked tube...52                                    0.26
## Drugs...53
## Environmental factor...54
## Natural (will of God)...55
## Obesity in both men and wome...56
## Obesity in both men and women...57
## Psychological stress...58
## Use of family planning device by women...59
## Not Selected...60
## Blocked tube...61                                    0.39
## Drugs...62
## Natural (will of God)...63
## Obesity in both men and wome...64
## Obesity in both men and women...65
## Psychological stress...66
## Not Selected...67
## Blocked tube...68                                    0.15
## Drugs...69
## Natural (will of God)...70
## Obesity in both men and wome...71
## Obesity in both men and women...72
## Rhesus incompatibility...73
```

```
## Not Selected...74
## Blocked tube...75                                        0.19
## Drugs...76
## Natural (will of God)...77
## Rhesus incompatibility...78
## Not Selected...79
## Blocked tube...80                                        0.02
## Drugs...81
## Not Selected...82
## Drugs...83                                               0.53
## Not Selected...84
```

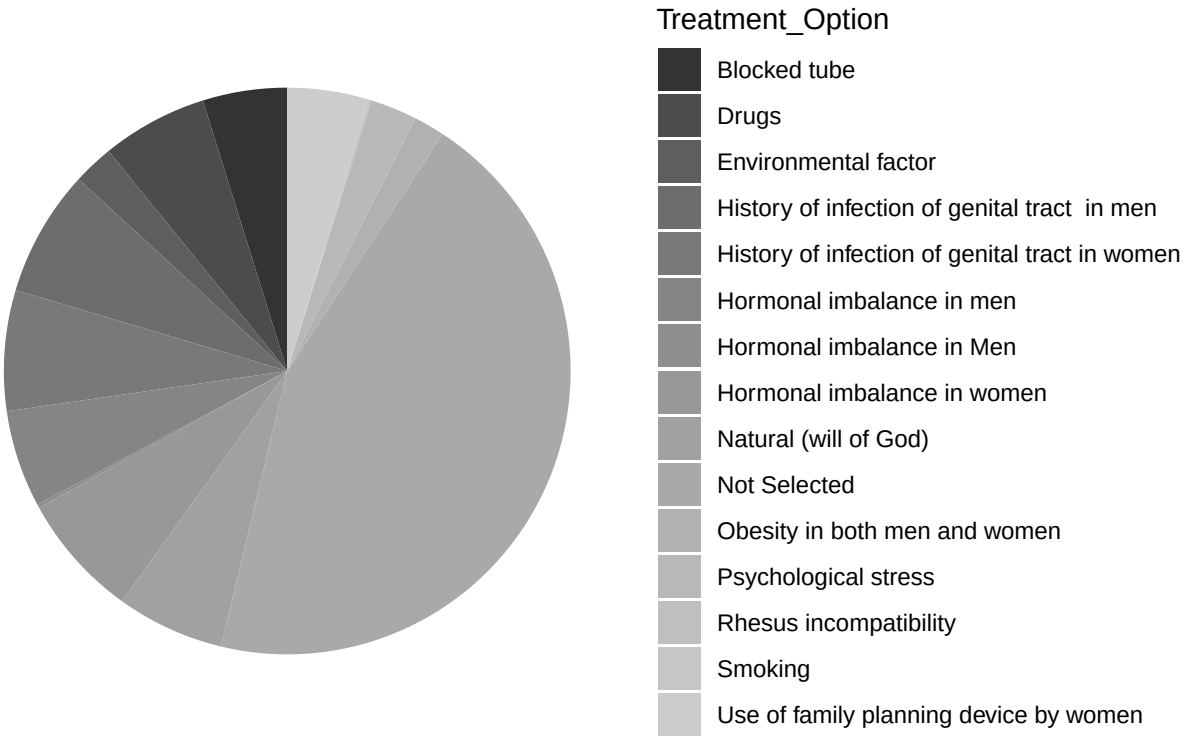
```
circles<-Known_cause%>%rownames_to_column("Treatment_Option")%>%
  select(-Variables,-p_value )%>%mutate(Treatment_Option=str_replace_all(Treatment_Option,"[...]\\d*","
  summarise(Fertile=sum(Fertile),Infertile=sum(Infertile))

library(plotly)
library(ggpubr)
fig2a <- plot_ly(circles, labels = ~Treatment_Option, values = ~Infertile, type = 'pie')
fig2 <- fig2a %>% layout(title = 'Treatment Options Known to Infertile Respondent',
     xaxis = list(showgrid = FALSE, zeroline = FALSE, showticklabels = FALSE),
     yaxis = list(showgrid = FALSE, zeroline = FALSE, showticklabels = FALSE))

fig2
```



```
fig3a <- plot_ly(circles, labels = ~Treatment_Option, values = ~Fertile, type = 'pie')
fig3 <- fig3a %>% layout(title = 'Treatment Options Known to Fertile Respondent',
   xaxis = list(showgrid = FALSE, zeroline = FALSE, showticklabels = FALSE),
   yaxis = list(showgrid = FALSE, zeroline = FALSE, showticklabels = FALSE))
fig3
```




```
ggplot(circles,aes(x="",y=Infertile,fill=Treatment_Option))+
  geom_bar(width = 1,stat = "identity")+coord_polar("y",start = 0)+
  theme_void()+scale_fill_grey()+
  theme(axis.title.x = element_blank())
```



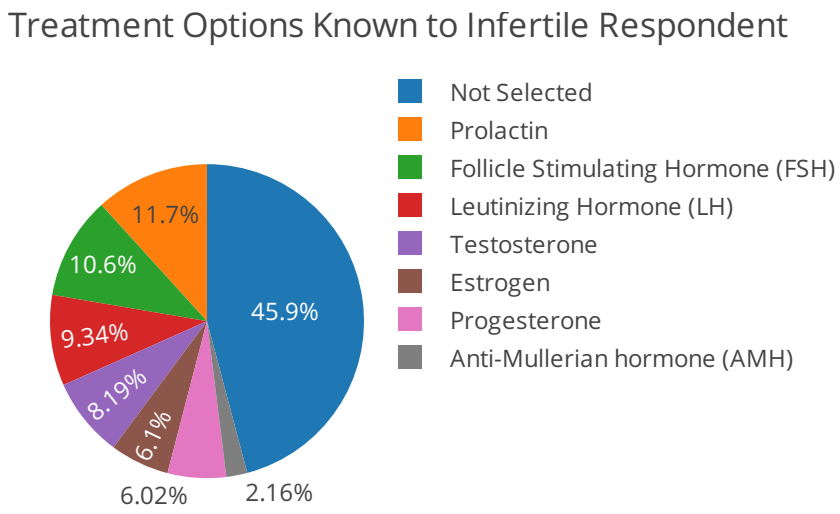

```
# Awareness of Hormonal Laboratory Investigation in Treatment of Infertility

Awareness_of_Hormonal_Laboratory_Investigation<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
  yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  separate(X17..Are.you.aware.of.these.hormonal.laboratory.investigations.that.can.be.conducted.for.infe
  select(an1,an2,an3,an4,an5,an6,an7,yes_no)
```

```
## Warning: Expected 7 pieces. Missing pieces filled with `NA` in 227 rows [1, 2, 3, 4, 6,
## 8, 9, 10, 11, 12, 13, 15, 16, 18, 19, 20, 21, 22, 23, 24, ...].
```

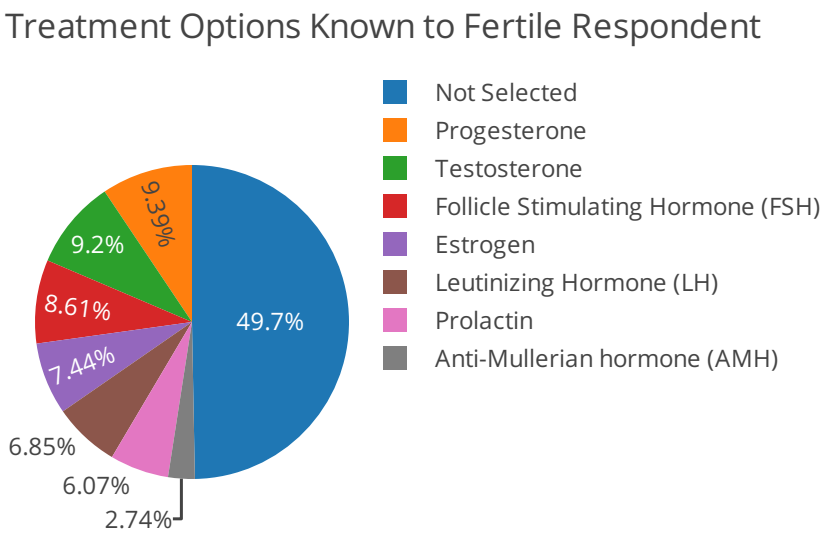
```
tret1<-Awareness_of_Hormonal_Laboratory_Investigation%>%group_by(yes_no)%>%
  count(an1)%>%pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="an1")%>%
  mutate(Fertile=str_replace_na(Fertile,"0"),Infertile=str_replace_na(Infertile,"0"),p_value=c("0.16","
tret1$Fertile<-as.integer(tret1$Fertile)
tret1$Infertile<-as.integer(tret1$Infertile)

tret2<-Awareness_of_Hormonal_Laboratory_Investigation%>%
  group_by(yes_no)%>%
  count(an2)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an2=str_replace_na(an2,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
  Infertile=str_replace_na(Infertile,"0"),p_value=c("0.01","","","","",""))%>%column_to_rownames(var="an
tret2$Fertile<-as.integer(tret2$Fertile)
```

```
tret2$Infertile<-as.integer(tret2$Infertile)

tret3<-Awareness_of_Hormonal_Laboratory_Investigation%>%
  group_by(yes_no)%>%
  count(an3)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an3=str_replace_na(an3,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
  Infertile=str_replace_na(Infertile,"0"),p_value=c("<0.001","","","","",""))%>%column_to_rownames(var=
tret3$Fertile<-as.integer(tret3$Fertile)
tret3$Infertile<-as.integer(tret3$Infertile)

tret4<-Awareness_of_Hormonal_Laboratory_Investigation%>%
  group_by(yes_no)%>%
  count(an4)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an4=str_replace_na(an4,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),Infertile=str_repla
  column_to_rownames(var="an4")
tret4$Fertile<-as.integer(tret4$Fertile)
tret4$Infertile<-as.integer(tret4$Infertile)

tret5<-Awareness_of_Hormonal_Laboratory_Investigation%>%
  group_by(yes_no)%>%
  count(an5)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an5=str_replace_na(an5,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.02","","",""))%>%column_to_rownames(var="a
tret5$Fertile<-as.integer(tret5$Fertile)
tret5$Infertile<-as.integer(tret5$Infertile)

tret6<-Awareness_of_Hormonal_Laboratory_Investigation%>%
  group_by(yes_no)%>%
  count(an6)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an6=str_replace_na(an6,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.18","",""))%>%
  column_to_rownames(var="an6")
tret6$Fertile<-as.integer(tret6$Fertile)
tret6$Infertile<-as.integer(tret6$Infertile)

tret7<-Awareness_of_Hormonal_Laboratory_Investigation%>%
  group_by(yes_no)%>%
  count(an7)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an7=str_replace_na(an7,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
  Infertile=str_replace_na(Infertile,"0"),p_value=c("0.94",""))%>%
  column_to_rownames(var="an7")
tret7$Fertile<-as.integer(tret7$Fertile)
tret7$Infertile<-as.integer(tret7$Infertile)
Treatment_Option<-bind_rows(ans_1=tret1,ans_2=tret2,ans_3=tret3,
                            ans_4=tret4,ans_5=tret5,ans_6=tret6,ans_7=tret7,.id = "Variables")

circles2<-Treatment_Option%>%rownames_to_column("Treatment_Option")%>%
  select(-Variables,-p_value )%>%mutate(Treatment_Option=str_replace_all(Treatment_Option,"[...]\\d*","
```

```
  summarise(Fertile=sum(Fertile),Infertile=sum(Infertile))

fig4a <- plot_ly(circles2, labels = ~Treatment_Option, values = ~Infertile, type = 'pie')
fig4 <- fig4a %>% layout(title = 'Treatment Options Known to Infertile Respondent',xaxis = list(showgri

fig4
```




```
fig5a <- plot_ly(circles2, labels = ~Treatment_Option, values = ~Fertile, type = 'pie')
fig5 <- fig5a %>% layout(title = 'Treatment Options Known to Fertile Respondent',xaxis = list(showgrid =
fig5
```

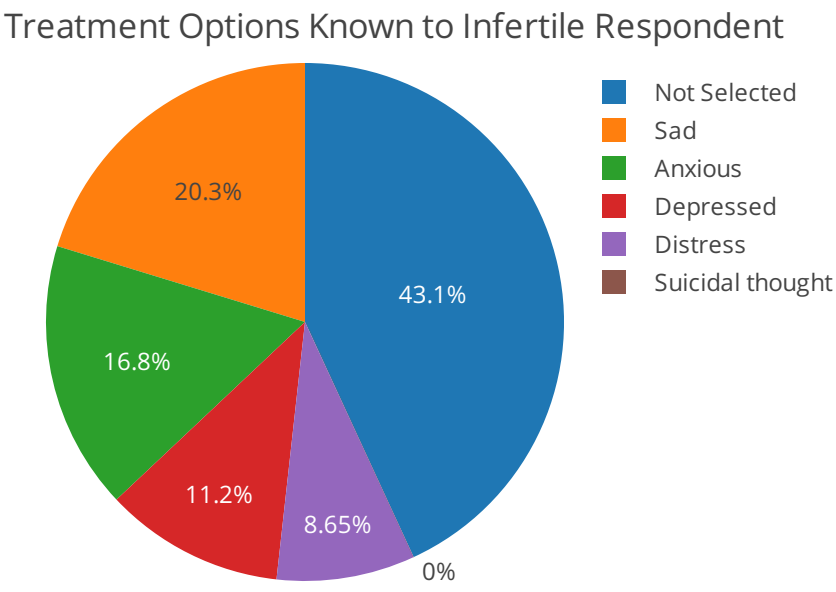



```
# Feeling After Failing Conception

Feeling_After_Failing_Conception<-Perception_propt%>%
  mutate(Duration_infertility=recode(X6..Duration.of.infertility,"Nil:"="Nil"),
  yes_no=ifelse(Duration_infertility=="Nil","Fertile","Infertile"))%>%
  separate(X22..How.do.you.feel.when.you.are.not.able.to.conceive.after.1.year.of.unprotected.sexual.in
  select(an1,an2,an3,an4,an5,yes_no)
```

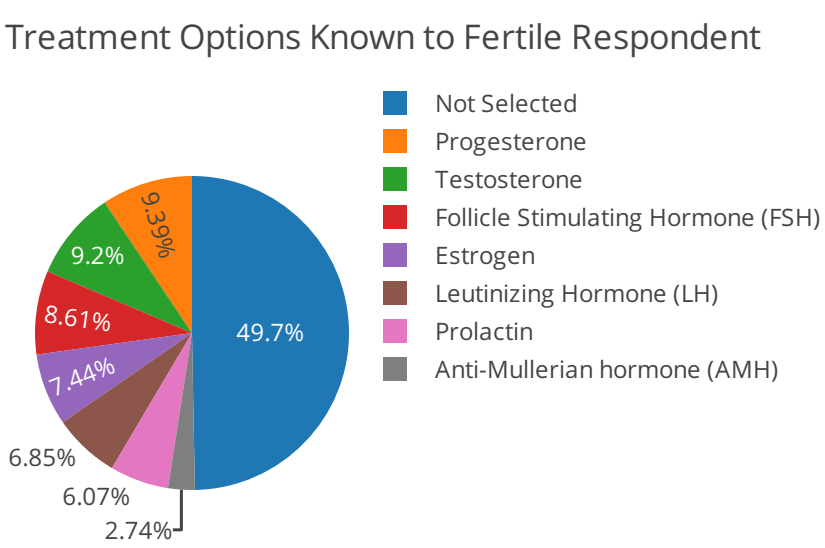
```
## Warning: Expected 5 pieces. Missing pieces filled with `NA` in 247 rows [1, 2, 3, 4, 6,
## 7, 8, 9, 10, 11, 12, 13, 15, 16, 17, 20, 21, 22, 23, 24, ...].
```

```
trat1<-Feeling_After_Failing_Conception%>%group_by(yes_no)%>%
  count(an1)%>%pivot_wider(names_from = yes_no,values_from = n)%>%
  column_to_rownames(var="an1")%>%
  mutate(Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("<0.001","","",""))
trat1$Fertile<-as.integer(trat1$Fertile)
trat1$Infertile<-as.integer(trat1$Infertile)

trat2<-Feeling_After_Failing_Conception%>%
  group_by(yes_no)%>%
  count(an2)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an2=str_replace_na(an2,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.002","","",""))%>%column_to_rownames(var=
```

```
trat2$Fertile<-as.integer(trat2$Fertile)
trat2$Infertile<-as.integer(trat2$Infertile)

trat3<-Feeling_After_Failing_Conception%>%
  group_by(yes_no)%>%
  count(an3)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an3=str_replace_na(an3,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.45","","",""))%>%
  column_to_rownames(var="an3")
trat3$Fertile<-as.integer(trat3$Fertile)
trat3$Infertile<-as.integer(trat3$Infertile)

trat4<-Feeling_After_Failing_Conception%>%
  group_by(yes_no)%>%
  count(an4)%>%
  pivot_wider(names_from = yes_no,values_from = n)%>%
  mutate(an4=str_replace_na(an4,"Not Selected"),Fertile=str_replace_na(Fertile,"0"),
         Infertile=str_replace_na(Infertile,"0"),p_value=c("0.25",""))%>%
  column_to_rownames(var="an4")
trat4$Fertile<-as.integer(trat4$Fertile)
trat4$Infertile<-as.integer(trat4$Infertile)

Feeling_Failing<-bind_rows(ans_1=trat1,ans_2=trat2,ans_3=trat3,
                           ans_4=trat4,.id = "Variables")

circles3<-Feeling_Failing%>%rownames_to_column("Treatment_Option")%>%
  select(-Variables,-p_value )%>%mutate(Treatment_Option=str_replace_all(Treatment_Option,"[...]\\d*","
  summarise(Fertile=sum(Fertile),Infertile=sum(Infertile))

fig6a <- plot_ly(circles3, labels = ~Treatment_Option, values = ~Infertile, type = 'pie')
fig6 <- fig6a %>% layout(title = 'Treatment Options Known to Infertile Respondent',
    xaxis = list(showgrid = FALSE, zeroline = FALSE, showticklabels = FALSE),
     yaxis = list(showgrid = FALSE, zeroline = FALSE, showticklabels = FALSE))

fig6
```




```
fig7a <- plot_ly(circles2, labels = ~Treatment_Option, values = ~Fertile, type = 'pie')
fig7 <- fig7a %>% layout(title = 'Treatment Options Known to Fertile Respondent',
         xaxis = list(showgrid = FALSE, zeroline = FALSE, showticklabels = FALSE),
        yaxis = list(showgrid = FALSE, zeroline = FALSE, showticklabels = FALSE))
fig7
```


Treatment Options Known to Fertile Respondent
Not Selected
Progesterone
Testosterone
Follicle Stimulating Hormone (FSH)
Estrogen
Leutinizing Hormone (LH)
Prolactin
Anti-Mullerian hormone (AMH)
49.7%
9.39%
9.2%
8.61%
7.44%
6.85%
6.07%
2.74%