SECTION V

SUMMARY
1. Male infertility refers to the inability of a male to contribute to a pregnancy in a fertile female within one year of married life with regular intercourse not using any method of contraception.

2. In human population malefactor contributes for 40-50% of infertility in married couple. Male infertility is commonly due to deficiencies in the semen, and semen quality is used as a surrogate measure of male fecundity. In Western countries one in four men consulting fertility clinics has specific condition like low sperm count, motility or and morphology, causing infertility. In India about 15–20% of married couples known to be sub/ infertile category, selected for medically Assisted reproductive technology (ART). However, a substantial portion of infertile patients still remain without help for various reasons such as lack of adequate treatment options and their accessibility, high cost and fear of conceiving and bearing potentially abnormal offspring. This is despite the fact that over the years ART has become useful for couples with infertility, with a good success rate of about 20 to 30% globally.

3. The basic diagnosis of male fertility is best described by the World Health Organization (WHO) laboratory manual for the examination for the human semen and sperm-cervical mucus interaction (WHO, 2010). Other complementary non invasive method for diagnosing the anatomical pathology of male infertility is Ultrasound scanning and Transrectal Ultrasound Scanning (TRUS) of the reproductive organs.

4. The present investigation was undertaken in infertile men in Mysore, with objectives of analysis of reproductive hormones, examination of internal and external reproductive organs in association with semen profile.
5. The literature survey about the known pathophysiology of male infertility and possible physiological and negative impact of anatomical changes on fertility pathways in men has been reviewed.

6. A total 274 confirmed subjects with infertility were considered for the present study from Medivawe IVF and fertility research hospital in Mysore. The age of the patients ranged from 21 to 50 years. Aged match controls consisting 130 males with normal semen parameters and proved fertility were also randomly selected from different locations of Mysore city, irrespective of their ethnic background. The informed written consent letter was obtained from the participants before including them in the study. This study was approved by the Institutional Human Ethical Committee of University of Mysore.

7. The diagnosis of infertile patients based on their semen characteristics were classified as aspermia, azoospermia, oligozoospermia, asthenozoospermia, teratozoospermia, oligoasthenozoospermia, oligoasthenoteratozoospermia etc. according to WHO guidelines (2010).

8. The incidence of consanguineous marriage among infertile group was not significant when compared with the control group.

9. Coital frequency was found to have no significant difference between infertile and control groups. No significant relationship was observed between coital frequency, age and BMI.

10. Analysis of clinical manifestation of all conditions revealed the following information:

   a. Azoospermia was most prevalent condition among infertile groups.
b. More than 50% of the infertile subjects were found with impaired semen liquefaction time and the number was significantly higher (7.6%) when compared with the control group.

c. Among infertile individuals 67.5% had abnormal semen pH values.

d. Independent t-test with respect to motility as a variable revealed that the infertile males showed a lower progressive motility values with significant difference compared to controls.

e. Comparison of sperm viability between study groups showed a significantly decrease in infertile group compared to control group.

f. Independent t-test for sperm and germ cell morphology assessment showed the higher values in control group with a significant difference with infertile group.

g. Pearson correlation analysis showed a negative relationship between BMI and all the quantitative semen parameters but the relationship between age and quantitative semen characteristics was negatively significant only for sperm viability and morphology.

h. Fructose was present in all control group is 13 µmol per ml. In infertile group out of 258 subjects fructose was completely absent in 3 (1.2%) subjects and partially detected in 19 (7.4%) subjects.

11. In the present study, data obtained on assessment of hormones revealed the following results:

a. LH level was higher in infertile males when compared to the controls.

b. FSH levels was also found to be higher in infertile males when compared to controls and the difference was significant.
c. Data showed that Prolactin levels lower controls when compared with the infertile but the value was not significantly different between groups.

d. Testosterone levels showed higher value in control group when compared to the infertile subjects and the difference was significant at 0.01 level.

e. Non significant increase of estradiol levels was found in infertile group when compared to controls.

f. Assessment of reproductive organs using Ultrasound scanning and TRUS revealed the following data:

g. Mean value of both right and left testicular volume was significantly higher when compared with the infertile subjects than infertile group.

h. Significant positive correlation was seen between total testicular volume and semen volume.

i. Highly positive relationship was observed between testicular volume and sperm motility.

j. Testicular volume was also observed to be significantly lower in men with low semen volume.

k. Both sperm count per ml and total Sperm count were directly related to total testicular volume.

l. Around 69.9% (267) of men had normal total sperm count per ejaculate (39 million and above) demonstrating the mean total testicular volume of 20.63 ml.

m. Significant positive correlation was seen between prostate volume and age, BMI semen volume, sperm count, total sperm count, sperm motility, normal sperm morphology and sperm vitality.
n. Pearson correlation test values were not significant between prostate volume and semen pH.
o. Non significant negative relationship was observed between prostate volume and semen liquefaction time.
p. Mean value of both right and left seminal vesicle volume was lower in infertile subjects when compared with the control subjects but the difference was not significant.
q. Pearson correlation test revealed a significant positive relationship between left seminal vesicle volume and BMI.
r. No significant relationship was observed between age and both right and left seminal vesicle volume.
s. Around 18.5% of infertile subjects showed abnormalities in both right and left epididymis.
t. 36.1% of infertile subjects were associated with different grade of varicocele.
u. Among infertile subjects 24.7% were found to be associated with Hydrocele.