Rationale & Objectives
wing to the available information and inadequate data, there is a further scope to study the relationship between lifestyle and environmental factors with respect to oxidative stress and deteriorating semen quality. The exact role of environmental toxicants on semen quality and also the level at which the semen quality is deteriorated is still to be explored. The data are scanty pertaining to the role of environmental toxicants and lifestyle factors on deterioration in human semen quality and very little information is available on the association of these factors with respect to reproductive hormones and accessory gland markers.

Although there is a growing body of literature relating the effect of specific substances on semen quality, the relationship between environmental chemical exposures and male infertility is more contradictory and less well documented. Some studies found differences between fertile and infertile males with respect to their occupational activities, exposure to chemicals or to physical agents as well as lifestyle factors, whereas other studies did not find significant differences to the same or similar exposures. Plenty of data is available showing the effect of smoking on semen quality and sperm DNA damage, but the data are insufficient pertaining to the effect of areca nut and tobacco chewing as well as cell phone usage on male reproductive function with respect to the changing lifestyles in recent years.

Also the involvement of genetic damage in terms of sperm DNA/chromatin damage caused by environmental and lifestyle factors plays a very important role in evaluating semen quality. Further, considering the oxidative damage to the sperm membranes that may result into the impairment of cellular and subcellular functioning, permeability, integrity as well as morphological alterations, the investigation of the role of seminal enzymatic and non-enzymatic antioxidant capacity, lipid peroxidation and protein oxidation in the seminal plasma that exhibit sperm abnormalities plays an important role in determining the normal functioning of spermatozoa and the mechanism of toxicity. Therefore this study was conceded to
explore the influence and effect of environmental pollutants, occupational and lifestyle characteristics on reproduction and fertility in males.

Keeping in view of these, the present study was carried out considering the following objectives:

- To determine the semen quality of study subjects attending for infertility problem
- To determine DNA/chromatin damage, apoptosis and sperm aneuploidy from the semen samples.
- To assess the level of oxidative stress biomarkers and reproductive as well as thyroid hormones
- To determine the environmental toxicants (metals) among normozoospermic, oligozoospermic and azoospermic subjects.
- To correlate the lifestyle and environmental factors with oxidative stress and semen quality among the study subjects.