The present study concerning the bio-social correlates of Polycystic ovarian syndrome (PCOS) among three cultural groups of Guwahati city i.e., Assamese, Bengali and Rajasthani married women is the first of its kind from the Anthropological angle. The study was undertaken under the backdrop of its growing importance. Elsewhere in India various study on various aspects of PCOS have been taken up including from the Medical anthropological approach.

This indeed is not a new disease but has been gained importance as more and more patients have been diagnosed as PCOS with the lapse of time. However, the exact cause of PCOS has not yet been ascertained but medical researches have reached the ultimate conclusion that PCOS is one of the most common endocrinal disorders among women, affecting 5-10% of women at reproductive age (Franks, 1995). Apart from the fact that PCOS disease is rising rapidly, scientists are of the opinion that socio-cultural factors like food habit, lifestyle, rapid urbanization and modernization, shift from traditional occupation of agriculture, breakdown of the joint family structure and changing value system of the society may have some effect on the disease. PCOS has been looked into mainly from the two primary aspects - biological and social. In the present study the biological aspects have been measured by anthropological parameters, such as, body weight, height, abdominal skinfold, suprailliac skinfold, waist-hip ratio and biochemical measurements, while the socio-demographic aspects include present age, age at marriage, nature of occupation (women and their husbands), food habits, education (women and their husbands), economic condition and active married life. In order to analyze the individual health-related-quality-of-life (HRQoL) in the affected women, Cronins health-related-quality-of-life questionnaire was used in this study (Cronins et al., 1998). This questionnaire was developed to measure the individual QoL in affected women. Five factor groups were defined: emotions (psychological problems, depression); hirsutism; body weight (overweight fat patterning); menstrual problems (amenorrhea, oligomenorrhea); and infertility. And lastly, the level of depression of the affected women was analyzed by using Beck's Depression Inventory.

The present study is based on samples mainly drawn on opportunity sampling technique from the patients coming to the Pratiksha Hospital of Guwahati city for treatment of PCOS. Whenever patients are entered into roll of the Hospital as having PCOS are included in the sample. A total of 456 respondents under three cultural
categories are examined as experimental group while a total of 501 respondents under the same cultural categories are examined as controlled group.

**Socio-demographic characteristics**

The findings of the study suggest that on the socio demographic profile, all the variables examined viz, age, occupation, educational level etc play significant role in the life of women having PCOS. Majority of the respondents belonging to both experimental and controlled group is of the age group 25-30 years followed by the next higher age group. It is found that the mean age of all three communities in respect of both experimental and controlled group do not differ significantly while on the other hand the difference is significant between means when taken up between controlled and experimental groups of Assamese and Bengali community implying thereby that both the sample come from separate universe.

The level of education of majority of the respondents belonging to both experimental and controlled group is high. No differences was observed in the level of education between the experimental and controlled group and therefore any differences in PCOS related factors whenever occur can be taken as not due to lack of education but due to other non educational factors.

Occupational status of both experimental and controlled groups of all three cultural categories show that majority of the respondents are housewives. This uniformity in occupation calls forth for consideration of spouse’s occupation and accordingly the occupation of husbands was taken into account. Most of the husbands are government and private service holders in case of Assamese and Bengali respondents belonging to both experimental and controlled groups. But in case of Rajasthani respondents most of the spouses are businessmen.

The monthly income profile of the respondents show that majority of them belong to middle income earning families in case of Assamese and Bengali (both experimental and controlled group) cultural groups. But in case of Rajasthani samples, majority is high income earners despite the fact that none of the Rajasthani respondents are engaged in paid employment.

It may be noted that more than 80 per cent of the Bengali and Assamese (belonging to both experimental and controlled group) are non-vegetarian. But all the
Rajasthani women (both experimental and controlled group) in the studied sample are purely vegetarian.

Among the respondents belonging to experimental and controlled groups, maximum got married between the ages 20 to 30 years. However, the maximum numbers of husbands of the respondents got married between 25-35 years. This reflects the traditional pattern of families of the respondents where slightly elder persons are chosen as husbands. Chi-square test shows significant difference in the mean age at marriage between the experimental and control groups of Assamese and Bengali community. There may be underlying physical constraints for getting married at an early age or there may be other reasons too, which requires further investigation in to the matter.

The findings relating to active married life suggest that length of active married life is shorter in case of controlled group than the experimental group except that of the Rajasthani group. Although in both the cases i.e. experimental and controlled groups - most of the respondents fall in the category of 1-5 years of active married life yet, the percentages are higher in case of controlled group and the differences between them are significant especially in respect of Assamese and Bengali community. Large scale variation can be observed when the mean of the active married life of experimental and controlled group of Assamese and Bengali groups are considered. The mean is higher in case of the experimental groups in all the cases and this establishes the fact that the extension of the active married life is caused due to the difficulties in conception and the repeated trials made for conception over a period of time.

**Biological characteristics and common symptoms of PCOS**

The biological profiles of the respondents have been examined in terms of i) anthropometric parameters and ii) purely biological factors and an attempt has also been made to substantiate the common symptoms of PCOS using the data.

As regards the anthropometric parameters the findings show that except height, all other variables show a definite and distinguished trend separately for experimental and controlled groups. The trend shows that variable values are more in case of experimental group than the controlled groups. The body mass index (BMI) of the three communities are analyzed and found that although the cause-effect relationship between the BMI and PCOS has not yet been established, yet the findings suggest that
PCOS women has tendency of getting overweight. The study showed that maximum numbers of PCOS women of all three communities fall in the category of overweight; while in case of non PCOS women, maximum numbers fall in the category of normal weight.

While examining the common symptoms of PCOS, it has been found that majority of the respondents belonging to the three cultural categories present irregular menstrual cycle which is more prominent among the Bengalis followed by Rajasthanis. In case of overweight as a symptom of PCOS, all the three categories of women show a more or less uniform trend. Thus overweight as manifested by the women in the experimental group can be accepted as symptom of the PCOS. Another major symptom associated with PCOS is dysmenorrhea and the women in all the three communities present this as a symptom. However the other symptoms like hypothyroidism and hirsutism appears to be very minor in case of the respondents under study and thus alone cannot determine the presence of PCOS in women.

As regards role of blood groups in PCOS, it is found that “O” is the dominant blood group among the respondents of both experimental and controlled groups. But the findings show that experimental groups have higher percentages of respondents having “O” blood group than the controlled group except in case of Rajasthani women. In fact as a whole, no definite trend can be observed from which it can be concluded that any definite type of blood group has any role in the PCOS.

The hormonal concentration of the PCOS women show that mean FSH and mean LH hormones are less than the normal range in case of all three communities and therefore it leads to a conclusion that there could be a decrease in the ovarian reserve which indicates infertility. Thus we can conclude that hormonal profile of the women could indicate whether a woman is having PCOS or not.

A comparative analysis of the reproductive measurements of the experimental and controlled groups show that average conception of the PCOS women of all three cultural groups is quite negligible but the rate is much higher in case of controlled group. Similarly, the success rates are also much higher in case of non-PCOS women belonging to all the communities. The results of the Chi-square test show that the reproductive measurements of both experimental and controlled group differ vastly in case of all the three cultural categories. From this, it can be inferred that higher the
reproductive measurement like, miscarriages, still births and for that matter the reproductive wastages, higher is the chances that the woman is suffering from PCOS.

The attempt to relate the socio-cultural variables to the anthropometric measurements, show that more the women are physically sound more are the span of active married life. Except for the last category i.e. active married life of more than 15 years, where only four women were recorded, in all other cases mean weight goes on increasing along with the active married life. Similar is the case with body mass index (BMI). Thus, it can be said that active married life and BMI are directly related—more the value of BMI more is the span of active married life.

An attempt to relate the reproductive measurements of the experimental groups to some of the socio-cultural variables inherent to them show that majority of this group of infertile women are housewives having educational level as graduate, belonging to medium income group, who got married at the age-group of 25-30 years and belong to android fat distribution and overweight. This is true for both Assamese and Bengali women having PCOS.

One notable finding of the study is that primary infertile women in the three experimental groups have irregular cycles. The irregular cycle is acute among the Bengalis constituting followed by Rajasthani women. These finding conforms to the common concept that irregular cycle is a common symptom of PCOS women.

In an attempt to examine the level of depression in terms of infertility, it is found that majority of the respondents having PCOS belonging to all three cultural groups are having moderate to severe depression. As much as 70.93 percent of the women belonging to Assamese experimental group are having moderate to severe depression; in case Bengali community it is 50.30 percent and in case of Rajasthani women it is 47 percent. This cultural variation is significant.

**Scopes for further research**

Researches on Polycystic ovarian syndrome (PCOS) have multiple dimensions. It is almost impossible to touch the entire aspects in a single work. The present study focuses on the correlation of bio-cultural aspects with PCOS of three prominent cultural groups of Guwahati city, Assam. Further research on the PCOS covering total examination of the sufferer, such as the Lipid profile test, total background of the family history (heredity) of the PCOS etc. is an urgent necessity. It is only then one can make
appropriate conclusion about the disease, its various manifestations and effects. Thus, as it is known that PCOS is multi-factorial and as its name implies it is a “syndrome” composed of set of symptoms, is quite complicated for a single researcher to cover. There is a vast field for further study on the diverse aspects of PCOS from different disciplines like medicine, psychology, human genetics and bio-cultural anthropology.

Conclusion
From the present study it can be concluded that:

a. Women of all the three prominent cultural groups (Assamese, Bengali and Rajasthani) of Guwahati city are more or less affected by Polycystic Ovarian Syndrome (PCOS).

b. Majority of the respondents belonging to the three experimental groups (Assamese, Bengali and Rajasthani) is mainly housewives, graduate and belong to medium income group. But the economic condition of the Rajasthani group is better than that of Assamese and Bengali populations.

c. Except Rajasthani respondents, the respondents belonging to the other two groups i.e. Assamese and Bengali are non-vegetarian.

d. In Assamese experimental group, average age at marriage is between 25-30years while it is earlier in Assamese controlled group, between 20-25 years. While in Bengali and Rajasthani (both experimental and controlled groups) age at marriages is between 25-30 years and 20-25 years respectively.

e. There are significant differences between weight, abdominal and suprailiac skinfold, waist-hip ratio, body mass index (except height) among the experimental and controlled group of all three populations.

f. Prominence of “O” blood group among the women having PCOS is notable. However blood groups as a whole do not appear to have any relation with the disease, Polycystic ovarian syndrome.

g. The reproductive measurements of experimental and controlled group of three populations are furnished in chapter-IV. It seems that the reproductive wastage is higher in experimental group in comparison to controlled group.

h. The symptomatology of PCOS in general causes a major reduction in the quality of life of experimental group of three populations. Overweight is the major
Secondly, infertility is a cause of reduced quality of life.

i. Women with increased body mass index are more likely to be infertile than women with normal weight. In women, overweight can affect fertility by causing hormonal imbalances that have an impact on ovulation and menstruation, and leads to PCOS.

j. In Assamese experimental group, number of overweight women is higher than that of Assamese controlled group. Similar is the case with Bengali experimental group and Bengali controlled group; and Rajasthani experimental group and Rajasthani controlled group.

k. Infertility caused by PCOS is one of the main problems among the experimental groups. In Assamese experimental group, women those who are suffering from primary infertility are mainly housewives, graduate, of medium income group, possess android fat distribution, have irregular menstruation and are overweight. In case of women having secondary infertility are also housewives, graduate, of medium income group, possess android fat distribution, irregular menstruation and are overweight.

In Bengali experimental group, women those who are suffering from primary infertility are mainly housewives, graduate, of medium income group, possess android fat distribution, have irregular menstruation and of course overweight. In case of women having secondary infertility are also housewives, graduate, of high income group, possess android fat distribution, irregular menstruation and are overweight.

Lastly, in Rajasthani experimental group, women those who are suffering from primary infertility are mainly housewives, graduate, of high income group, possess android fat distribution, irregular menstruation and of normal body mass index. In case of women having secondary infertility are also housewives, graduate, of high income group, possess android fat distribution, show irregular menstruation and are overweight.

l. The anthropometric measurements of three experimental groups show that women having primary infertility have similar anthropometric measurements.
with women of secondary infertility. These measurements only differ with controlled group of each population (except height).

m. In Assamese, Bengali and Rajasthani experimental group, moderate level of depression is seen to be highest in the age-group of 25-30 years and those who are primarily infertile.

Since it can be said that all the three population does not differ from each other in respect of PCOS disease, except with respect to genetic, social and biological factors that influence PCOS and goes hand-in-hand. Biologically, it is concluded by other researcher that 'insulin resistance' is the main cause of this disease. Once the body become insulin resistant it becomes difficult to breakdown carbohydrate. Thus, deposition of fats as well as it is also difficult to lose the deposited fats. It seems that education is not directly linked with PCOS but plays a vital role. Now-a-days, women of urban areas try at least to be graduates and if they get opportunity want to be a working woman having independent income. Educated women also prefer to get married at a later age. In the present study, more than 80% of women are housewives. Women of urban areas love to do work which has less physical activity and avoid heavy work. That is why they tend to use labour and time saving equipments like washing machine, mixer grinder, blender, and microwave ovens in their household works which were not available in earlier days. Increasing use of the tasty processed foods available in the markets made cooking easier and faster; but one must not forget that foods are having high caloric value. A new emerging trend is the inclusion of new international brands of restaurants that are diverting the sense of taste of the people towards them. The traditional or homemade dishes are less tastier but of appropriate calorific value. Mushroom growth of fast food corners in towns and cities has contributed to this change in food habits which in turn led to the high growth rate of obesity and higher number of population now possess android fat distribution. These factors have led to the increasing number of women affected by Polycystic Ovarian Syndrome. Infertility is one of the symptoms of PCOS. Those who are overweight and obese, they can enhance their fertility and their chances of having healthy baby by losing weight. That is why weight reduction should be the first line treatment for the obese infertile women. This needs a multidisciplinary approach to weight management that fosters lifestyle change through proper diet, exercise, behavior modification and stress reduction. The tragedy, of course,
is that this is easy advise to dispense- but very hard to do in real life. No one wants to be obese and losing weight can be really hard to accomplish.

The Quality-of-life (QoL) of the three PCOS populations is different in comparison to the controlled population. They are sufferers both mentally and physically. The pressure of family as well as of the society to have children makes them mental sufferer. In the present study, it is found that all the PCOS sufferers always have to face critical queries about this disease from their neighbours, relatives, co-workers and acquaintances. The depression levels of all the three PCOS populations are more or less the same. They become highly depressed because of the combined effects of all three factors- their weight gain, infertility problem and irregular menstruation.

Since last few years, the urbanization of Guwahati city is increasing rapidly. Urbanization has both positive and negative effect in one’s life. A city can provide positive inputs into the life of a person or a group of persons by providing good educational and occupational life, amenities and medical facilities. Among the negative effect of a sedentary city life, fondness for lazier, luxurious life with available processed foods and avoidance of physical labour are important. Thus, one becomes affected by several diseases such as heart disease, diabetes and polycystic ovarian syndrome. So, one should enjoy the full benefits of urbanization without letting them to impact on one’s life negatively.