INTRODUCTION:
Nasal bone is an important fetal structure to be evaluated during the first and second trimesters of pregnancy. It begins its development at around the 6th week of gestation and is first visualized on ultrasound at 11 weeks of gestation or 42mm of crown-rump length (CRL). [1,2,3]

Nomograms of nasal bone length have been in use in obstetric ultrasound for ruling out a number of fetal chromosomal aneuploidies. This correlation between the nasal bone length and fetal chromosomal aneuploidy stands the strongest in the case of Down syndrome, which, in turn, is the most common chromosomal aneuploidy found amongst the live births. [2]

The morphometrics of the nasal bone, however, differs with ethnicity. [1]. A normal reference range for fetal nasal bone length has been established for the Caucasian, Afro-American and South American populations. [1,2,3,4,5,6,7,8] but such data is at best scanty with reference to the subcontinent. As the facial symmetry varies widely with ethnicity, the existing normal range of fetal nasal bone length may induce misinterpretation of normal Indian fetuses as possible aneuploid. Therefore, if this marker has to be applied for routine screening in the subcontinent, it is critical that a normal nasal bone length reference be established.

MATERIALS & METHODS:
The study included 104 antenatal women referred to Department of Radiodiagnosis of IMS & SUM Hospital, Bhubaneswar. The study was conducted for a period of 1 Years (August 2017 to August 2018). Inclusion criteria consist of normal antenatal women of gestational age between 11 to 15 weeks. Those affected with physical and mechanical conditions which limit a proper view of fetal nasal bone like Maternal obesity, Oligohydramnios, Fetal presentations incompatible with obtaining a mid-sagittal view of the fetal face were excluded. The gray scale real time ultrasonographic examination were performed using Samsung Accuvix A30, Samsung HS70A & GE Voluson E6 USG Machine. The transducers used were 2.5 MHz convex array.

THE SCAN WAS USED TO EVALUATE THE FOLLOWING:
• Length of the fetal nasal bone in millimeters.
• Crown-rump length in millimeters and in terms of gestational age (up to 14 weeks).
• Biparietal diameter in millimeters and in terms of gestational age.
• Head circumference in millimeters and in terms of gestational age.
• Abdominal circumference in millimeters and in terms of gestational age.
• Femur length in millimeters and in terms of gestational age.

METHODOLOGY:
Before the scan an informed written consent was taken from all participants who fit into the inclusion criteria. A detailed clinical history was taken and ultrasonography findings were recorded in a pre-designed proforma. NBL measurements were taken in mid sagittal view.

“THE MID-SAGITTAL VIEW OF THE FETAL FACE IS DEFINED AS:
• Presence of the echogenic tip the nose and rectangular shape of the palate anteriorly.
• The translucent diencephalon in the center.
• The nuchal membrane posteriorly.

Deviations from the exact midline plane result in non-visualisation of the tip of the nose and visibility of the zygomatic process of the maxilla and subseqently wrong assessment. [9,10]

USG was performed with the pregnant mother lying supine. Trans-abdominal sonogram was performed by placing the transducer over the gravid uterus. Measurement of the fetal nasal bone was performed via a mid-sagittal view of the fetal head. The maximum length was measured in millimetres. Patient was followed up till delivery to record fetal outcome.

THE AIMS OF THIS STUDY WAS TO:
1. Establish the reference range of fetal nasal bone length (NBL) of Indian fetuses between 11 to 15 weeks of gestational age and to study its correlation with fetal outcome. This study presents the normal range of fetal nasal bone length in fetus between 11 to 15 weeks of gestational age. The fetal NBL was measured in millimetres in a strict sagittal view of the fetal head. The NBL appears to be marginally shorter in Indian fetuses than in other fetuses. This indicates that the normal range would vary among races so while considering the measurement a relative percentile is a more reliable screening criterion than an absolute value.

2. Establish a nasal bone length and fetal chromosomal aneuploidy correlation. Nasal bone length in fetuses as possible aneuploid. Therefore, if this marker has to be applied for routine screening in the subcontinent, it is critical that a normal nasal bone length reference be established.

REFERENCES:
[1,2,3,4,5,6,7,8,9,10]
Table 1: Distribution of nasal bone length (in mm) as per gestational age (in wks.) (n=104)

<table>
<thead>
<tr>
<th>EGA</th>
<th>N</th>
<th>5</th>
<th>10</th>
<th>25</th>
<th>50</th>
<th>75</th>
<th>90</th>
<th>95</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-11+6</td>
<td>10</td>
<td>1.6</td>
<td>1.75</td>
<td>2.2</td>
<td>2.6</td>
<td>2.8</td>
<td>3.0</td>
<td>3.0</td>
</tr>
<tr>
<td>12-12+6</td>
<td>17</td>
<td>1.9</td>
<td>2.0</td>
<td>2.3</td>
<td>2.8</td>
<td>3.0</td>
<td>3.5</td>
<td>4.0</td>
</tr>
<tr>
<td>13-13+6</td>
<td>49</td>
<td>1.9</td>
<td>2.3</td>
<td>2.6</td>
<td>3.0</td>
<td>3.2</td>
<td>3.8</td>
<td>4.0</td>
</tr>
<tr>
<td>14-14+6</td>
<td>15</td>
<td>2.8</td>
<td>2.9</td>
<td>3.0</td>
<td>3.1</td>
<td>3.2</td>
<td>3.4</td>
<td>4.0</td>
</tr>
<tr>
<td>15-15+6</td>
<td>13</td>
<td>2.9</td>
<td>2.9</td>
<td>3.2</td>
<td>3.3</td>
<td>3.7</td>
<td>4.0</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Table 2: Various percentiles of nasal bone length (in mm) as per gestational age (in wks.) (n=104)

<table>
<thead>
<tr>
<th>Wks.</th>
<th>5 percentile bone length (mm)</th>
<th>10 percentile bone length (mm)</th>
<th>25 percentile bone length (mm)</th>
<th>50 percentile bone length (mm)</th>
<th>75 percentile bone length (mm)</th>
<th>90 percentile bone length (mm)</th>
<th>95 percentile bone length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15</td>
<td>ND</td>
<td>3.5</td>
<td>3.2</td>
<td>3.3</td>
<td>3.3</td>
<td>3.2</td>
<td>2.7</td>
</tr>
</tbody>
</table>

The NBL appears to be marginally shorter in Indian fetuses than in other fetuses. This indicates that the normal range would vary among races. This study shows that the ethnicity of the mother affects the normal range of fetal NBL.

It is inferred that, the current study showed no significant statistical difference between east-indian population and rest of indian population.

CONCLUSIONS

There exists a linear positive correlation between fetal Nasal bone length and the estimated gestational age. Instead of only commenting on presence or absence of nasal bone NBL length measurement can be incorporated in the routine anomaly scans to rule out fetal aneuploidies and their outcomes. However larger study population is required to firmly establish the normal reference range and cut-off values.

REFERENCES