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Maternal Nutritional Status during Pregnancy among the Oraon Tribe in Odisha

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ABSTRACT

Maternal nutrition has a significant impact on pregnancy outcomes and the long-term health of both the mother and the child. Adequate dietary intake during pregnancy is essential for foetal growth. Maternal nutrition during pregnancy affects maternal as well as neonatal mortality and morbidity. In India, however, maternal malnutrition remains a serious public health problem, particularly among socio-economically vulnerable populations and indigenous communities. Sundargarh district in Odisha is home to several tribal communities, including the Oraon tribe which is one of the largest and culturally significant groups in the region. A cross-sectional study was conducted among 105 pregnant women of Oraon tribe in Sundargarh district to understand their socio-demographic profile and assess their nutritional status. Data were collected through structured interviews and anthropometric measurements, including height, weight and Body Mass Index (BMI) along with prevalence of anaemia among pregnant women. The findings revealed a low socio-demographic profile of majority of the pregnant mothers, characterized by early pregnancy, limited education and low income. Nutritional assessment indicated the prevalence of low BMI and anaemia, highlighting significant dietary deficiencies. This study highlights the need of targeted nutritional interventions, community-based health education, and enhanced access to prenatal care in tribal communities. Improving mother and child health outcomes requires strengthening maternal nutrition programs that are adapted to the Oraon tribe's specific cultural and socioeconomic contexts.

Keywords: MotherNutritional status, Oraon tribe, Pregnant, Profile.

INTRODUCTION

Mother is the only available source of nutrients for foetal development during pregnancy. One of the most important factors influencing the health of both mothers and children is maternal nutrition (Limbu and Arya, 2019). It is essential for promoting foetal development, lowering the chance of pregnancy and delivery complications, and curbing the spread of malnutrition from generation to generation. Pregnancy-related optimal foetal growth, effective placental function, and enhanced maternal health are all ensured by adequate consumption of macronutrients and micronutrients. However, poverty, food insecurity, and a lack of access to high-quality healthcare services indicate that many pregnant women in India, particularly those in rural and tribal areas remain nutritionally vulnerable. During pregnancy, anthropometric and biochemical measures like height, weight, body mass index (BMI), and haemoglobin levels are frequently used to evaluate the nutritional status of the mother. These measures help in the detection of micronutrient deficiencies, undernutrition, and overweight, especially iron-deficiency anaemia, which is still a major public health issue in India. According to the National Family Health Survey-5 (NFHS-5) 52.2% of pregnant women in India and 61.8% of pregnant women in Odisha had anaemia, underscoring the need for focused nutritional interventions. Among young rural Indian women, low birth weight and limited foetal growth were substantially correlated with the mother's poor nutritional status in the early stages of pregnancy (Sharma and Jain, 2023; Gokhale and Rao, 2021). Preterm birth, low birth weight, and intrauterine growth restriction (IUGR) are all consequences of inadequate nutrient intake during pregnancy, and they all raise the risk of long-term developmental delays and neonatal morbidity. Foetal organ development and brain growth are directly hampered by nutritional deficiencies like iron, folic acid, and protein-energy

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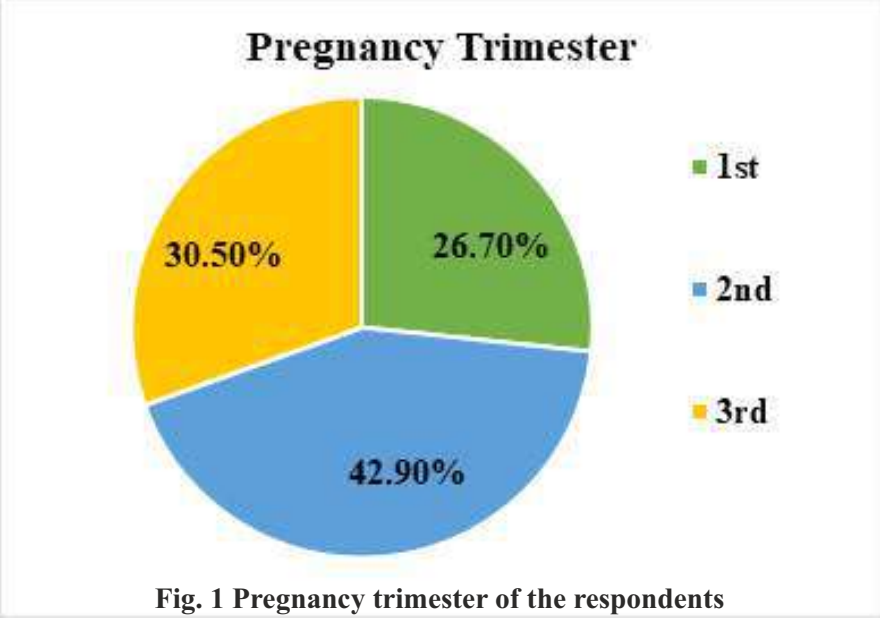


Fig. 1 Pregnancy trimester of the respondents

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malnutrition (Martin *et al,* 2022; Arya *et al,* 2018). The risk of maternal undernutrition is increased in India's tribal communities due to particular socioeconomic and health issues. These include lack of access to maternal healthcare services, low literacy, traditional eating habits, and remote location. Due to high rates of early marriage, multiple pregnancies, and ignorance of dietary requirements during pregnancy, tribal women in Odisha are especially at risk (Contractor *et al,* 2018; Deepika and Reddy, 2018). Poor anthropometric measurements and a high prevalence of anaemia in pregnant tribal women are caused by these factors.

These challenges are best illustrated in the Oraon tribe, one of the major tribal communities of east-central India, primarily residing in the Chota Nagpur Plateau region of India, specifically in the states of Jharkhand, Odisha, Chhattisgarh, and West Bengal. In the state of Odisha, they are largely found in Sundargarh district. The Oraons are traditionally agrarian and depend upon seasonal labor and forest products for their livelihood. Women's nutritional status is impacted by several community problems including poverty, inadequate sanitation, and a lack of dietary diversity. Hence the present study was conducted with the objective to assess the socio demographic profile of the respondents and to evaluate the nutritional status of the respondents. The purpose of this study is to assess the nutritional status of pregnant Oraon women in the Sundargarh district of Odisha. The study aims to inform targeted interventions that can improve maternal and child health outcomes in this marginalized population by analysing anthropometric and clinical indicators in relation to their sociodemographic profiles.

MATERIALS AND METHODS

A cross-sectional study was conducted among 105 pregnant Oraon mothers from all the pregnancy trimesters. Five blocks namely Balisankara, Subdega, Kutra, Badgaon and Rajgangpur were purposively chosen based on the secondary data having a greater number of Oraon tribal population of Sundargarh district. The information was collected with the help of a semi structured interview schedule; anthropometry measurements were taken using stadiometer and biochemical information was collected from mother and child protection card maintained by Anganwadi workers. The data were analyzed using descriptive statistics.

RESULTS AND DISCUSSION

Assessing the socio-demographic profile of the respondents

The socio-demographic profile is an important factor that affects the health and nutritional status. Therefore, different aspects of socio-demographic profile of tribal pregnant mothers like age, age at marriage, education, occupation, monthly income of the family, status of pregnancy, trimester of pregnancy were gathered from the respondents. Table 1 shows the distribution of pregnant mothers according to their age. The data reveal that the majority of the respondents (38.09%) were in the age group of 25–29 yrs, followed by 20–24 yrs that is 23.80%. About one-fifth (20%) of

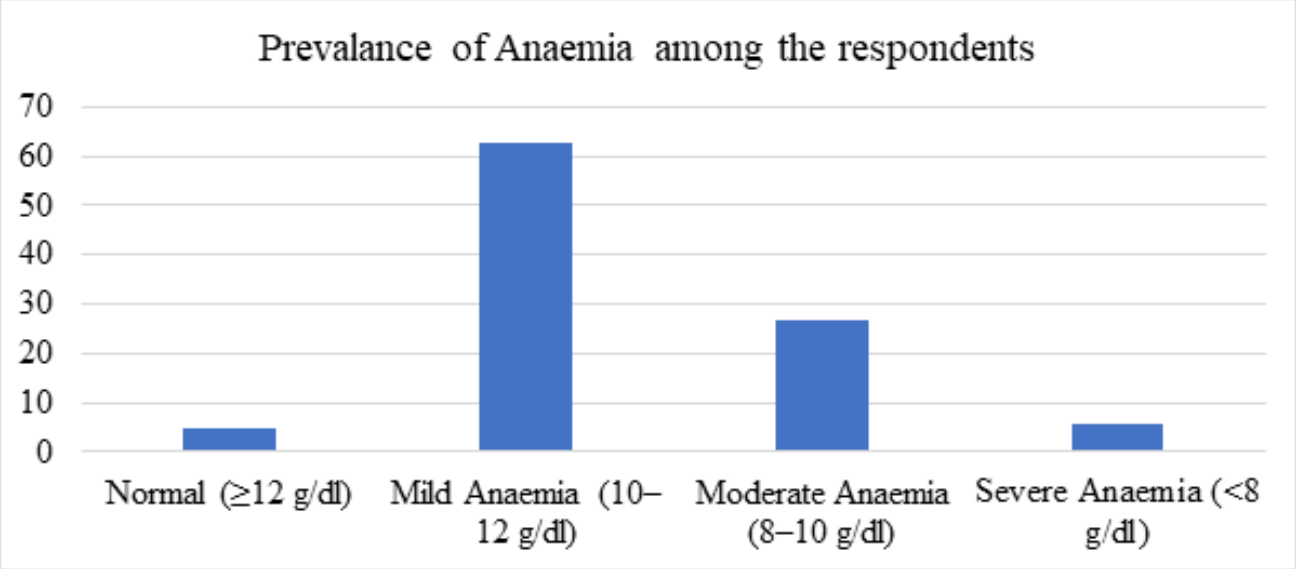


Fig. 2 Prevalence of anaemia among Oraon tribal pregnant mothers

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the mothers were in the 30–34 yrs age group. A smaller proportion of mothers were in the 15–19 yrs category (10.47%), indicating the cases of early pregnancies among the Oraon community. Only 4.76% were in the 35–39 yrs group, and a small proportion (2.85%) belonged to the above 40 yrs category.

The data (Table 1) showed the distribution of pregnant mothers according to their age at marriage. The results indicate that majority of the respondents (46.66%) were married between the ages of 19–23 yrs, followed by 32.38% who were married at an early age of 14–18 yrs. A smaller proportion (20.95%) of the women got married between 24–28 yrs. The findings highlighted that nearly one-third of the Oraon tribal women were married before appropriate age of marriage in India (18 yrs), indicating a prevalence of early marriages. The largest proportion of marriages occurred during the 19–23 yrs age range, which is considered the most common marriageable age in many communities. Comparatively fewer women married at a later age (24 yrs and above). Similarly, a study conducted by Mallick and Roy in Alipurduar District, West Bengal and found that women were marrying before the age of 18 and entering motherhood in the early age which results in adverse pregnancy outcomes.

The distribution of pregnant mothers according to their age at their first pregnancy revealed that the majority of women (50.47 %) , experienced their first pregnancy between 19–23 yrs of age, indicating that this is the most common age group for conception. About 22.8 percent of mothers had their first pregnancy in the age range of 24–28 yrs, while 19.4 percent reported early pregnancies between 14–18 yrs. A relatively smaller proportion, 5.71 percent, experienced motherhood at 29–33 years, and only 1.9 percent had their first pregnancy above the age of 34 yrs. These results suggested that early adulthood, particularly 19–23 yrs, was the predominant age for first pregnancy among the study population.

The data indicated the distribution of Oraon tribal pregnant mothers of Sundargarh district according to their educational qualification. The findings indicated that the highest proportion of mothers, 45.7 per cent, had completed education up to the high school level, followed by 32.4 per cent who studied up to middle school. Around 10.5 per cent of mothers had received primary education, while a small proportion, 5.7 per cent, had studied up to the intermediate level. Only 1.9 per cent of the mothers were graduates, reflecting very limited higher educational attainment in the study population. Furthermore, 3.8 per cent of the mothers were found to be illiterate. Overall, the results highlighted that while most pregnant mothers had some level of schooling, the majority had not pursued education beyond the high school stage.

The data showed that majority of the respondents that is 74 mothers (70.5%), were homemakers, indicating that most women were engaged in household responsibilities rather than income-generating work. About 28 mothers (26.7%) were self-employed and part of different income generating SHG groups, showing a significant proportion contributing through small-scale or independent activities. Very few mothers were in

Table 1: Socio economic status of the respondents.

Sr. No.	Parameter	Number	Frequency
A. Age of respondent	Age Group (Yrs)		
1.	15-19	11	10.47
2.	20-24	25	23.80
3.	25-29	40	38.09
4.	30-34	21	20
5.	35-39	5	4.76
6.	> 40	3	2.85
B. Age at marriage			
7.	14-18	34	32.38
8.	19-23	49	46.66
9.	24-28	22	20.95
C. Age at first pregnancy			
10.	14-18	20	19.4
11.	19-23	53	50.47
12.	24-28	24	22.8
13.	29-33	6	5.71
14.	>34	2	1.9
D.Educational qualification of mothers			
15.	Illiterate	4	3.8
16.	Primary	11	10.5
17.	Middle School	34	32.4
18.	High School	48	45.7
19.	Intermediate	6	5.7
20.	Graduate	2	1.9
E. Occupation of Mothers			
21.	Home Maker	74	70.5
22.	Labourer	1	1.0
23.	Govt. Job	2	1.9
24.	Self Employed	28	26.7

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formal employment: only 2 mothers (1.9%) have a government job, and just 1 mother (1.0%) works as a labourer.

The fig. 1 presents the distribution of pregnant mothers according to their stages of pregnancy. The majority proportion of women, that is 45 numbers of mothers (42.9%), are in the second trimester. This was followed by 32 mothers (30.5%) who were in the third trimester, while 28 mothers (26.7%) were in the first trimester. Overall, the data showed that the majority of the respondents were in their second trimester of pregnancy, with fewer in the early and late stages. Overall, the findings highlighted that the Oraon tribal pregnant women were predominantly young, married early, have low educational status, limited formal employment, and are primarily in the mid-stage of pregnancy, which collectively influence their health and nutritional status.

Nutritional status of the respondents

The assessment of anthropometric measurements (Table 2) and nutritional indicators provided critical insights into the health status of the pregnant mothers in the study. BMI in the first trimester is an essential measure of maternal nutritional health since it reflects the mother's pre-pregnancy status prior to major gestational weight increase. A low BMI (<18.5 kg/m²) at this stage is associated with maternal undernutrition, increasing the risk of low birth weight, intrauterine growth restriction, and preterm birth. A high BMI (≥25 kg/m²) predisposes to complications such as gestational diabetes, hypertensive disorders, and macrosomia. Thus, evaluating BMI early in pregnancy is critical for identifying at-risk women, directing appropriate nutritional treatments, and making recommendations for optimal gestational

Table 2: Anthropometric measurements of the respondents

Anthropometric Measurement	Mean	Standard deviation
Height (cm)	150.430	3.85338
Weight in 1st trimester (kg)	44.247	7.23211
Weight during investigation (kg)	49.981	9.23018
BMI in 1st trimester	19.526	2.86579

Table 3. BMI of pregnant mothers in 1st trimester of the pregnancy

BMI level	Number	Frequency
Underweight (<18.0)	41	39.04
Normal (18.5-24.9)	61	58.09
Overweight (25.0- 29.9)	03	2.85
Obese (>30.0)	00	00

Table 4: Prevalence of Anaemia among the pregnant mothers

Anaemia range	Number	frequency
Normal (≥12 g/dl)	5	4.76
Mild Anaemia (10–12 g/dl)	66	62.86
Moderate Anaemia (8–10 g/dl)	28	26.67
Severe Anaemia (<8 g/dl)	6	5.71

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weight growth to improve maternal and newborn outcomes.

The data (Table 2) represented the anthropometric measurements of the respondents in the form of height weight data in 1st trimester of pregnancy from the mother and child protection card, weight during investigation, and Body Mass index (BMI) in the first trimester. The average height of the mothers was 150.43 cm with a standard deviation of 3.85 cm, indicating that most women were of short stature with little variation in height. The mean weight during their first trimester was 44.25 kg (SD = 7.23), while the average weight during the time of investigation increased to 49.98 kg (SD = 9.23), reflecting weight gain during pregnancy. The Body Mass Index (BMI) during the first trimester of pregnancy was found to be 19.53 (SD = 2.87), suggesting that, on average, mothers were at the lower end of the normal BMI category.

Body Mass Index (BMI)

A majority of the mothers, that is 61 numbers of women (58.09%), had a normal BMI (18.5–24.9). However, a considerable proportion of pregnant mothers, that is 41 mothers (39.04%), were found to be underweight (BMI <18.5), indicating a high prevalence of maternal undernutrition in the study population (Table 3). Only 3 mothers (2.85%) were overweight (BMI 25.0–29.9), and none of the participants were in the obese category (BMI ≥30). Overall, the findings suggested that while most mothers fall within the normal BMI range, a significant proportion are underweight, which poses a risk for complicated pregnancy outcomes such as low birth weight. Similar study was conducted among 18,697 tribal women from Bihar, West Bengal, Jharkhand, and Odisha, using data from the National Family Health Survey-5. The study discovered that the incidence of underweight and overweight was 28.5% and 7.6% among tribal women, respectively.

The table 4 and figure 2 shows the distribution of pregnant mothers based on their haemoglobin levels. The results show only 5 mothers (4.76%) had normal haemoglobin (≥12 g/dl), indicating that the majority were anaemic. Mild anaemia (10–12 g/dl) was the most common, affecting 66 mothers (62.86%), followed by moderate anaemia (8–10 g/dl) in 28 mothers (26.67%). A smaller proportion, 6 mothers (5.71%), were found to have severe anaemia (<8 g/dl).

Overall, the data revealed a very high prevalence of anaemia among pregnant mothers in the study population, with most cases falling into the mild to moderate range, which highlights a serious public health concern for maternal and child health. Similar results found in some studies mentioned below. Shrinivasa *et al* (2014) conducted research in Kerala with a sample size of 347 women, found that 96.52% were anaemic with 30.54% had mild anaemia, 55.90% experienced moderate anaemia, and 10.08% had severe anaemia. Dwivedi *et al* (2023) also conducted research in Rajasthan with 429 women, found that 85.76% were anaemic with 21.44% had mild anaemia,

62.93% had moderate anaemia, and 1.39% had severe anaemia. These findings underscore the dual burden of maternal undernutrition and anaemia, which collectively pose significant risks for maternal morbidity, poor pregnancy outcomes, and compromised neonatal health.

CONCLUSION

The study revealed insights into the socioeconomic and nutritional health of pregnant Oraon tribal women in Sundargarh district of Odisha. The data indicated a poor socioeconomic profile, including early marriage, early age at first pregnancy, little educational attainment, and little engagement in formal work. Nutritional examinations reveal substantial issues, with a significant number of women being underweight (39.04%) and an alarmingly high frequency of anaemia (95.2%), the majority of which is mild to moderate. These variables together increase the likelihood of unfavourable pregnancy outcomes such as low birth weight, maternal morbidity, and long-term child health issues. The findings highlighted the urgent need for targeted, culturally relevant interventions to combat maternal malnutrition and anaemia in tribal people. Strengthening prenatal care services, encouraging diverse eating patterns, and improving community-based health education can all assist to minimize nutritional vulnerability. Furthermore, initiatives to delay marriage, enhance female education, and boost livelihood alternatives for indigenous women are critical to breaking the intergenerational cycle of hunger. Overall, addressing both the socio-demographic and dietary determinants of maternal health is crucial to improving pregnancy outcomes and promoting mother and child health in the Oraon tribal group.

REFERENCES

Arya M, Sachan V K, Limbu R, Nautiyal P and Papnai G (2018). Effect of training on nutritional knowledge of Anganwadi workers of Uttarkashi District in Uttarakhand. *J Krishi Vigyan* **7**(1): 105-108.

Bhattacharya A, Pal B, Mukherjee S and Roy S K (2019). Assessment of nutritional status using anthropometric variables by multivariate analysis. *BMC Pub Health* **19**: 1045. https://doi.org/10.1186/s12889-019-7372-2

Biswas L, Kanrar P and Goswami M (2020). Reproductive Health and Health Care Practices of the Oraon Tribal Women of Nadia, West Bengal. *Antrocom J Anthro* **16**(1): 141-152.

Contractor S Q, Das A, Dasgupta J and Van Belle S (2018). Beyond the template: The needs of tribal women and their experiences with maternity services in Odisha, India. *Int J Equity Health* **17**: 134. https://doi.org/10.1186/s12939-018-0850-9

Corrêa G, Das M, Kovelamudi R, Kovelamudi R, Jaladi N, Pignon C, Vysyaraju K, Yedla U, Laxmi V, Vemula P, Gowthami V, Sharma H, Remartinez D, Kalon S, Polnay K, Smet M D and Isaakidis P (2017). High burden of malaria and anemia among tribal pregnant women in a chronic conflict corridor in India. *Confl Health* **11**: 10. https://doi.org/10.1186/s13031-017-0113-1

Deepika K S and Reddy R G (2018). Nutritional Awareness among Adolescent Girls in Mahabubnagar District in Telangana. *J Krishi Vigyan* **7**(special): 107-110.

Dwivedi R, Goel A D, Vyas V, Sharma P P, Bhardwaj P and Singh K (2023). Is Maternal Anemia among Tribal Women being Neglected? A Study from Southern Rajasthan. *Indian J Pub Health* **67**(2): 313-315.

Gardia P and Udgata J (2024). Maternal Healthcare during Pregnancy in Tribal Community of India. *Int J App Home Sci* **11**: 659-664. https://doi.org/10.36537/IJAHS/11.11&12/659-664

Ghosh-Jerath S, Singh A, Lyngdoh T, Magsumbol M S, Kamboj P and Goldberg G (2018). Estimates of Indigenous Food Consumption and Their Contribution to Nutrient Intake in Oraon Tribal Women of Jharkhand, India. *Food & Nutri Bul* **39**(4): 581–594. https://doi.org/10.1177/0379572118805652

Gokhale D and Rao S (2021). Compromised maternal nutritional status in early pregnancy and its relation to the birth size in young rural Indian mothers. *BMC Nutri* **7**: 73. https://doi.org/10.1186/s40795-021-00478-4

Islary J (2014). Health and health seeking behaviour among tribal communities in India: A socio-cultural perspective. *J Tribal Intell Coll India* 1-16.

www.IndianJournals.com
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Downloaded From IP - 216.73.216.189 on dated 14-Nov-2026

Kanrar P and Goswami M (2020). Sociodemographic profile, reproductive health and nutritional status among the Juangs-a particularly vulnerable tribal group of Odisha, India. *Ori Anthropol* **20**(1): 135-149.

Limbu R and Arya M (2019). Effect of Nutrition Education on Knowledge Level of Farm women. *J Krishi Vigyan* **8**(1): 92-95.

Mallick A and Roy S (2020). Socio-demographic Determinants of Fertility and Under-five Mortality: A Cross-sectional Study on the Oraons of Alipurduar District, West Bengal, India. *Indian J Pub Health Res Dev* **11**(4): 427 https://doi.org/10.37506/ijphrd.v11i4.4336

Martin S C, Kumar R and George M (2022). Diet and nutritional status of women of reproductive age (15–49 years) in indigenous communities of Attappady, Kerala, India. *Nutri* **16**(16): 2698. https://doi.org/10.3390/nu16162698

Sahoo P P (2021). Indigenous Health Care Practices among the Oraon Tribe of Bisra Block, Sundargarh, *Soc Cult Dev India* **1**: 55-67.

Sharma S and Jain M (2023). Performance of India on gender disparity in health and survival: A temporal analysis. *J Krishi Vigyan* **11**(2): 281-287.

Shrinivasa B M, Philip R R, Krishnapali V K, Suraj A and Sreelakshmi P R (2014). Prevalence of anemia among tribal women of reproductive age-group in Wayanad district of Kerala. *Int J Health Allied Sci* **3**:120-124

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