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Association Between Maternal Age And External Dysmorphic Features Among Newborns.

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ABSTRACT

Congenital anomalies are chief factor leading to long term physical, mental and financial constraints on the family and society. The frequency of congenital anomalies worldwide is 3-5 %, although it varies from region to region and based on the educational and economical status of the nation. To identify and record the birth defects (external dysmorphism) among newborns delivered in district hospital attached to Mandya Institute of Medical Sciences, Mandya city for a duration of 1 year and to study the association between maternal age and external Dysmorphic features among newborns. After obtaining written informed consent of the parent, new born was examined for birth defects (visible external dysmorphic features) and the details was recorded in the self-designed proforma and findings/data was statistically studied. The study was performed in accordance to institutional ethical committee guidelines. This study will form a guideline to conduct appropriate newborn screening method for identifying external dysmorphism and also give feedback to the clinicians (obstetricians) to perform relevant antenatal investigations to prevent and detect the birth defects.

Keywords: Anomalies, Dysmorphism, Malformation.

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INTRODUCTION

Congenital anomalies is referred as functional or structural defects that occurs during preembryogenesis and embryogenesis period of a fetal life and may be diagnosed prenatally using appropriate diagnostic tests, at the time of birth, or may be detected later in infancy and childhood, for example sensorineural hearing loss [1]. Serious birth defects can be lethal. For those who survive, these disorders can cause lifelong mental, physical, auditory or visual disabilities. Birth defects are a global problem, but their impact is particularly severe in underdeveloped and developing countries, where more than 94% births with serious congenital anomalies and 95% of the neonatal death occur [2]. The congenital anomalies accounts for 8-13% of perinatal deaths and 12-15 % of neonatal deaths in India [3,4]. The exact prevalence of Congenital anomalies varies in different areas and among different populations. The long-term survival of the neonates with external dysmorphism is much lower than normal children [5]. Despite of the high frequency of congenital anomalies the underlying causes for most remain obscure in 50 % of the cases. In 2010 congenital anomalies were estimated to be fifth largest cause of neonatal death [6]. Around 40-60% of congenital anomalies are of unknown etiology, many are multi-factorial. Known factors are genetic, maternal, nutritional, behavioural, infectious and environmental [7]. Spectrum of external dysmorphic varies from minor birth defects to major birth defects. Minor defects includes polydactyly, syndactyly etc. and major defects are life threatening and some are incompatible with life eg. Anencephaly, holoprosencephaly etc [7,8]. Preventive public health services must work to reduce the frequency of certain external dysmorphism/defects through the early detection and management of risk factors or should reinforce protective factors. Adolescent women and mothers should have a healthy balanced diet, adequate intake of minerals and vitamins, particularly Folic acid, Iron in adolescent women and mothers. Measures and awareness for mothers to avoid harmful teratogenic substances such as alcohol and tobacco, reducing environmental exposure to hazardous agents (heavy metals and pesticides) during antenatal and perinatal period, strengthening in terms of education and training of professional health staff and those responsible for promotion of preventive measures for external dysmorphism and screening procedures for infections agents, such as Toxoplasmosis, Rubella, Cytomegalovirus (CMV), syphilis, varicella-zoster, parvovirus B19 and Herpes infections. Establishment of reforms and policies for surveillance, registeration and monitoring of congenital anomalies and to allow swift evaluation of national interventions policies, such as fortification of the food supply with iron, iodine, vitamin A, vitamin D, folic acid, etc [6,8].

Peri-conception medical services should assist couple specially the mother to attain appropriate health and well-being at the beginning and whole course of pregnancy to establish a normal pregnancy and delivery without any unfortunate pregnancy. This may include general diagnostic test to screen for the risk of congenital anomalies [9,10]. The health professionals should be trained for early diagnosis of birth defects and knowing when to refer a patient for specialized treatment.

MATERIALS AND METHODS

Newborns delivered in the district hospital, Mandya Institute of Medical Sciences, Mandya city for a duration of one year were examined after getting consent from parents, the newborn were examined for visible external dysmorphic feature and the details was recorded in the pre-designed proforma and findings/data was studied using appropriate statistical methods. Photographs of the newborns with external birth defects/dysmorphism were taken for keeping record of the defect. The inpatient number and other patient details were kept in record for further follow up and for referral services by District Early Intervention Centre (DEIC) for newborn with external dysmorphic features to obtain further management. Descriptive statistics comprising proportion and percentage were used to describe the data obtained from the study and graphical representation was done (bar diagrams, pie charts, line graph etc.) to study the association between maternal age and external dysmorphism among newborn. Prior ethical clearance at the institution was obtained from the Institutional Ethics Committee (IEC), Mandya Institute of Medical Sciences, Mandya city for conducting the study and examining the newborns.

RESULTS

This hospital based cross-sectional study was done at Tertiary Care Centre of Mandya Institute of Medical Sciences, Mandya for a duration of one year on live newborns. The population for study were selected by using simple random method keeping in view the operational feasibility, 502 live newborns

were examined physically for external dysmorphic features and, the assocation between maternal age and external dysmorphic features was studied.

Table 1: Total number of external dysmorphic features among newborn

External Dysmorphism	Frequency	Percentage
Not Present	485	96.6 %
Present	17	3.4 %
Total	502	

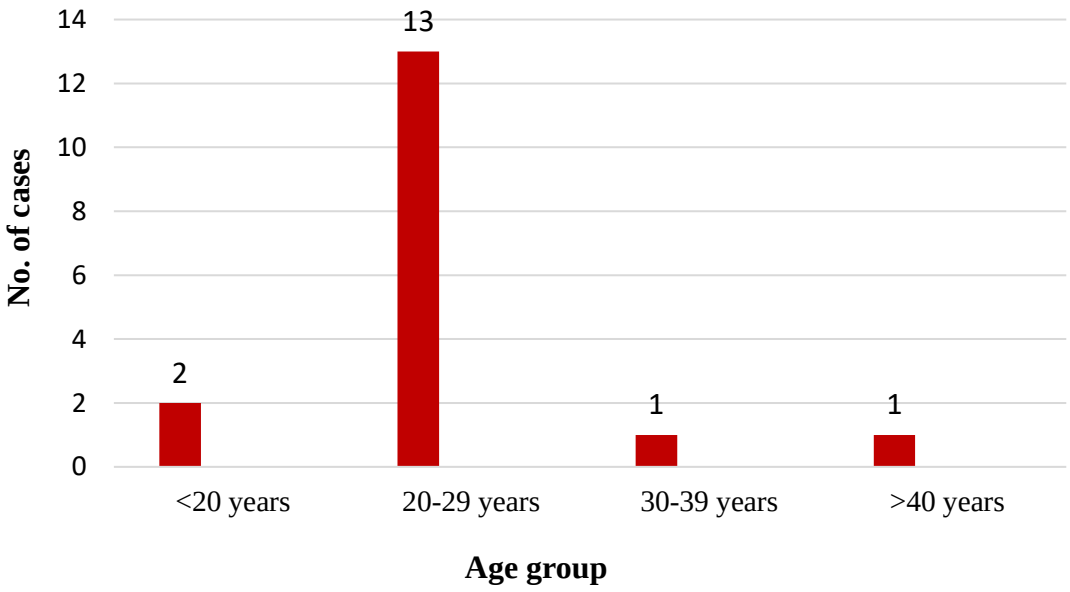
During the present study, 502 live newborns were examined at the district hospital Mandya Institute of Medical Sciences, of which **17** of the cases presented with external dysmorphic feature. The prevalence of the external dimorphism in the present study is **3.4%.**

Table 2: Association between Maternal age and external dysmorphism among newborns

Age of Mother (Years)	Frequency	Percentage (%)
<20	2	11.76
20 – 29	**13**	**76.47**
30-39	1	5.88
>40	1	5.88

Maternal age is an important factor for association of congenital dysmorphic anomalies. In the present study relationship between maternal age and babies born with congenital external dysmorphism showed statistically high number of cases were born of mothers aged 20-29 years.

Figure 1: Association of Maternal age and external dysmorphism



DISCUSSION

During the study period, 502 live newborns were examined of which 17 (**3.39%**) of the cases were diagnosed with external dysmorphic features, which is a consistent with the prevalence observed by other investigators around the globe (3-6%). Worldwide prevalence is 3-5% but varies from country to country. In the present study prevalence rate is relatively low compared to **8%** which was reported in **Pakistan** and in hospital neonatal unit based study of countries like **Nigeria** that has **3.7%**, in **Taiwan 4.3%** and higher than European countries, **Oman 2.46%** and of **Bahrain 2.7%.**[9] Various studies shows conflicting results in the developing countries like India, One such studies conducted by **Sarkar et al**

[12].in Eastern India and **Adnan et al** [13]. in Peshawar, Pakistan showed a prevalence rate of 2.22 % and 2.9 %. Maternal age is an important factor for association of congenital dysmorphic anomalies. In the present study relationship between maternal age and babies born with congenital malformations in our study found, that the malformed babies were born of mothers aged 20-28 years. **Suguna Bai et al** [14]. and **Fateme et al** [15] reported a higher incidence of malformation in the babies born to mothers aged over 35 years., whereas **Dutta et al** [16] documented statistically insignificant association of increased maternal age associated with congenital anomalies. The study done in Pakistan **Gul et al** [17] has showed the highest (80.6%) incidence between the age group of 20-40 years. **Anjum et al** [18] reported that the majority of neonates with CAs are born to mother's aged 25-38 years.

CONCLUSION

In the present study, out of the 502 newborn babies which were examined, **17 cases** showed **congenital external dysmorphism** of various type. The prevalence rate in the present study is **3.4 %.** The congenital external dysmorphism were more common in mothers belonging to age group **20 – 29 years (76.47 %).** The neonate with congenital external dysmorphic features were referred to DEIC (District Early Intervention Centre) for further management. This study will form guideline to conduct appropriate new born screening for birth defects and also give feedback to the obstetricians to perform relevant antenatal investigations to prevent and detect the birth defects and take appropriate measures in the perinatal period/childhood period, to help the child to grow into productive & healthy individuals for the nation.

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