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Research Paper

PREVALENCE OF DEVELOPMENTAL DELAYS AMONG INFANTS

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Abstract: Children are said to be developmentaly delayed if they fail to reach developmental milestones at the expected age. Developmental delay is considered as a disability, which the child displays either due to biological or environmental factors. This affect child's speech, language, fine and gross motor skills and cognitive development. So delay or abnormal development may affect individual areas of development or child's overall development. Based on this a need was felt to study the prevalence of developmental delays among infants born in government and private hospitals of Dharwad. Detailed information of the newborn was collected within 24 hours of birth. After 6 months of interval developmental assessment were made by administering Bayley scale for infant development (BSID-1993), test for screening developmental delays developed by National Institute for the mentally handicapped, Secunderabad (2000). Student't' test was employed to know the differences in the psychomotor and mental development between low birth weight and normal birth weight infants. The results revealed that psychomotor and mental developmental levels of low birth weight and pre-term infants fell in low and medium level of development when compared with normal birth weight infants. The incidence of developmental delays was noticed in case of low birth weight infants either with or without birth complications, while among normal birth weight infants only among those born with birth complications delays were found.

INTRODUCTION

Children are said to be developmentaly delayed if they fail to reach developmental milestones at the expected age. Individual children may be delayed in one area or several areas of development. Developmental delay is considered as a disability, which the child displays either due to biological or environmental factors. This affect child's speech, language, fine and gross motor skills and cognitive development. So delay or abnormal development may affect individual areas of development or child's overall development. A developmental delay occurs when child has the delayed achievement of one or more of his milestones. . Approximately 3 per cent of all infants and children are developmentaly delayed (Fonald 1991). The low birth weight babies present unique problems pertaining to their survival and subsequent growth and development. Significant proportions of these infants show evidence of neurological and intellectual retardation sequelae in later childhood. So, it is necessary to know the development of low birth weight children right from birth in order to know their pattern of development and also to compare the children with normal birth weight group who are brought up in a similar environment. Hence, it was felt necessary to study the incidence of developmental delays among low birth weight infants and who also had birth complications. The objective of the study was firstly to study the incidence of low birth weight, pre-term and normal birth weight and secondly to know the developmental delays among low birth weight and normal birth weight infants with and without birth complications.

METHODOLOGY

A list of hospitals was obtained from district health office of dharwad. There were totally 16 hospitals in dharwad city. Among them 14 were private hospitals and 2 were government hospitals. The fourteen private hospitals were contacted and two of these hospitals were selected on the basis of number of cases they admitted in their hospitals and who were cooperative. Both the government hospitals were selected (as the number of government hospitals were only two).

Concentrated efforts were made to visit all the selected four hospitals regularly for a period of three months to know the prevalence of developmental delays among infants. Mothers were interviewed with the help of interview schedule after delivery to elicit the necessary information. The secondary data was collected from birth register, case sheets and baby's information sheet.

Information provided by the mother was cross checked with the case records. Newborn's length was measured with the help of infantometer. The data consisted of both primary and secondary sources. All the information was collected within 24 hours of birth of newborn.

All the consecutive birth in the selected four hospitals during the period of 3 months was recruited for the study. A total sample of 627 from government and 231 private were included in the study. As there were only four pairs of twins only single ton births were considered. Among a total sample of 904 low births weight were 229, normal birth weight were 616, preterm 29 and 30 were still birth. Of these low birth weights 67 were born with complications and 162 were without complication. Among the low birth weight 67 were born with complications and 162 were without complication. Among normal birth weight 94 were with complications.

To test the developmental outcomes and developmental delays of infants at 6 month among various birth status viz., low birth weight, normal birth weight and preterm only those who were residing in the Dharwad were selected. A minimum of 25-30 samples were selected from each of the four categories viz., low birth weight with and without complications and normal birth weight with and without complications. The newborns were grouped in to several categories considering the Apgar score too. Thus the total sample constituted 121 infants (14%) out of 904 live births.

The scales employed were self-constructed questionnaire to assess the birth status of infants. Bayley scale for infant development (BSID-1993), Test for screening developmental delays developed by National Institute for the mentally handicapped, Secunderabad (2000), and Apgar rating scale (APGAR, 1953).

Student't' test was employed to know the significant differences in the psychomotor and mental development

between low birth weight and normal birth weight infants and chi-square to know the association of birth complications with developmental outcomes.

RESULTS AND DISCUSSION

The analysis of the results and Birth status of the newborn born in government and private hospitals is presented as follows.

The mean scores of MDI and PDI of infants are presented by birth status in Table 1. There were 10 categories by different weight group, Apgar score and birth complications. Total mean indices of both psychomotor (122.52) and mental (117.13) development was found more in case of normal birth weight with no complication group, especially when compared with same weight group with complications. When compared with low birth weight with and without complication the total mean difference in attainment of psychomotor mental development was very less (1-2 mean value). Similar trend was observed in case of preterm with and without complications. All these categories scored below 95 in both PDI and MDI when compared with infants born with normal birth weight.

Prevalence of developmental delays among infants is presented in table 2. The comparison was made between normal infants with and without complications. From the table it is observed that birth weight of infants with and without complications was related to psychomotor and mental developmental indices which was statistically significant indicating that normal birth weight group with complications tended to be delayed in developmental milestones and as number of birth complications increased the developmental level (both PDI and MDI) of infants decreased indicating that these complications hindered the developmental level of infants. The results are in line with Goodman (2003), Mandich et al. (1994) who reported normal birth weight group were able to perform better than other group who had medical complications at birth. In case of low birth weight with and without complications the relation was not found to be significant (table 3) indicating that low birth weight itself was a serious problem.

The PDI and MDI were significantly related to birth weight. It might be the reason that low birth weight of the infants along with complications makes them delayed. Complications along with poor development may further make the child deficit in psychomotor and intellectual functions. Lack of stimulation and congenial atmosphere may add to the delay. The result are in line with Kay and White field (1989), Astbury (1990), Anne Goyen et al. (1998) and Strauss (2000), who reported that infants who were low birth weight born, small for gestational age had significantly performed lower and tended to be delayed when compared with infants born with normal apgar gestational period. However, Westdood and Collives (1993) found no significant difference on cognitive developmental score of infants at one year of age. It may due to 'catch up' or better environment that resulted in no significant difference in cognitive functioning at one year.

CONCLUSION

It can be concluded that incidence and prevalence of developmental delays was found more in low birth weight either with or without birth complications than the infants of normal birth weight without complications. Presence of complications among normal birth weight also resulted in developmental delays. Low birth weight and pre-term conditions even in the absence of complications at birth were still a high risk and would lead to developmental delays. So early intervention is necessary to prevent developmental lags in their early life.

Table 1. Psychomotor and mental developmental levels of infants at six month of age

	N	PDI			MDI		
		Low <90	Medium (90-110)	High (>110)	Low <90	Medium (90-110)	High (>110)
Preterm with no complication low Apgar score	6	-	6 (100.0)	-	-	6 (100.0)	-
Preterm with complication low Apgar score	2	-	2 (100.0)	-	-	2 (100.0)	-
Complication low Apgar score LBW	25	25 (100.0)	-	-	25 (100.0)	-	-
No complication Low Apgar score LBW	20	20 (100.0)	-	-	20 (100.0)	-	-
No complication normal Apgar score LBW	2	2 (100.0)	-	-	2 (100.0)	-	-
Complication normal Apgar score LBW	3	3 (100.0)	-	-	3 (100.0)	-	-
Complication low Apgar score normal children	23	20 (86.9)	3 (13.1)	-	23 (100.0)	-	-
No complication lower Apgar score normal children	4	2 (50.0)	2 (50.0)	-	4 (100.0)	-	-
No complication normal Apgar score normal children	31	-	3 (9.7)	28 (90.3)	-	11 (35.5)	20 (64.5)
Complication normal Apgar score normal children	5	-	3 (60.0)	2 (40.0)	1 (20.0)	4 (80.0)	-

Table 2 Comparison of PDI and MDI of normal birth weight with and without complications

	Without	With	't'
N	31	23	
PDI	122.52 (8.88)	78.57 (10.17)	16.90***
MDI	117.13 (9.64)	74.78 (8.91)	16.48***

Table 3. Comparison of PDI and MDI of low birth weight with and without complication

	Without	With	't'
N	20	25	
PDI	76.10 (7.79)	75.72 (7.22)	0.163^{ns}
MDI	73.95 (6.15)	72.72 (6.37)	0.654^{ns}

*** Significant at 0.001 level of probability

N – Number

PDI - Psychomotor developmental levels

MDI - Mental developmental levels

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