

that negative maternal feelings could not be totally recorded with this self-reported subjective measure. The extent of depression can be gauged by the fact that in our study, while 38% of the mothers reported depression in the extremely severe category, 26% were in the severe category. However, after the PSIO procedure, the depression levels reduced by 68% and the average values were in the normal category.

Johns et. al. conducted a study using the Edinburgh Postnatal Depression Scale (EPDS) on 206 mothers with an infant having cleft lip/cleft palate or both²⁶. They reported anxiety in 57.3% of such mothers besides other emotions of difficulty in coping, scared and feeling sad. In the current study, extremely severe anxiety was seen in 50% of the mothers of cleft babies which could be not only because of aesthetic and feeding concerns for their child but also due to apprehension for the future challenges that might be faced by the child. Another 14% of the mothers were found to experience severe anxiety for their infants. These challenges may encompass worry about the health care and financial burden that they might have to face as the child grows. At the end of the PSIO procedure, the level of anxiousness was found to reduce to normal levels with a reduction of 69%.

An increased parental stress during infancy and toddlerhood was reported in a study of 47 parents of children with oral clefts²⁷. The shock and distress experienced by the mother upon giving birth to an infant with a cleft may affect parent-infant interactions^{24,28}. In our study, the mothers of cleft infants were found to be in moderate category of stress with nearly one-fourth of the respondents in the extremely severe category. This, however, improved to normal levels after pre-surgical orthopedics.

The correlations drawn between the mother's perception of improvement in facial morphology and reduction in their DASS scores revealed that, for nearly one and a half times improvement in the appearance parameters, there was a reduction in depression by 68%, anxiety by 69% and stress 66%. The maximum scoring change was given to overall facial appearance which was 180% improved. Hence the parents appreciated the improved facial aesthetics brought about by PSIO procedures even prior to surgery. Thus the improvement in esthetics brought about PSIO procedure was well perceived by the parents and such changes helped in a significant reduction of depression, stress and anxiety even before the actual union of the cleft lip through primary surgical repair.

In a study by Chattopadhyay *et al* in North Indian population (similar to our study population), 50 percent of the parents reported that they avoided family gatherings due to child's condition²⁹. Thus, the psychological aspects of parenting especially in the case of children with special needs are important as the method of upbringing a child is greatly affected by the level of stress the parent experiences. The higher levels of depression and anxiety lead to increased aggression, restrictive parenting, and a more negative approach

in solving matters related to children³⁰. Thus, an effort was made through this study to gauge the impact of having a newborn with a cleft deformity on the parents, particularly the mother. The role of the mother in the care of a newborn is indispensable and even today in many of the societies the mother has to bear the brunt of the society for any kind of deformity in the newborn. Also, nearly all the infants undergoing the therapy were accompanied by mothers at each visit unlike the fathers who may not necessarily report for each appointment. Hence in our study we sought mother's response to understand the psychosocial aspect of the cleft deformity and the PSIO procedures. In the study by Johns et. al reporting post partum depression in mothers of infants with cleft lip and palate, the total EPDS (Edinburgh Postnatal Depression Scale) scores describing the anxiety, and incidence of feeling scared was higher in the mothers of infants with cleft lip or cleft lip and palate who did not receive a prenatal diagnosis²³.

The post PSIO procedure values showed that the average depression, anxiety and stress levels in parents of babies with cleft reduced to normal after 3 months of therapy. Undoubtedly with the passage of time, the initial shock of having a baby with facial deformity gets diluted but restoration to normal levels definitely indicates some reassurance owing to the intervention carried out to reduce the extent of disfigurement. To assess such a correlation mothers opinion about the change in child's facial appearance was recorded prior to and at the end of PNAM therapy.

The limitations of our study include the absence of a control group wherein no PSIO intervention was given to assess the effect of increased acceptance of the deformity by the mother over a period of time which could not be assessed by us. The other socioeconomic factors, familial support, literacy levels etc can have a great effect on the responses of the participants at various stages of the study. Additionally, we did not attempt to assess postnatal stress for mothers unrelated to cleft care as there have been studies that found nearly 30% of mothers experience at least one of the emotions of depression, anxiety or stress, in the *mild, moderate, severe* or *extremely severe* categories during 6 weeks to 6 months postpartum^{23,26}.

CONCLUSION

The birth of the child with cleft leads to Depression, anxiety and stress of severe and extremely severe grades in the parents particularly the mother as revealed in this study. The procedure of Pre Surgical Orthopaedics is initiated within the first week of the birth of a child with cleft lip and palate deformity which is a crucial time for such families. The PSIO procedure brings about marked improvement in facial morphology which is well perceived by the mothers and undoubtedly uplifts their morale to work for the betterment of their child. This is reflected in the significant improvements in the depression, anxiety and stress levels which reduce to normal levels post-treatment.

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