EVALUATION OF PSYCHOLOGICAL STATUS OF CLEFT PALATE CHILDREN OVER FIVE YEARS OF AGE IN SOUTHERN SRI LANKA

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Abstract - Introduction: Cleft palate is one of the commonest congenital malformations of the head and neck region. Patients with oral clefts may also exhibit other anomalies. Cleft palate is associated with long term disability and psychological stress among individuals.
Objective: To identify the psychological status of cleft palate subjects in southern Sri Lanka.
Materials and methods. The subjects were identified among those who are currently under review in the Regional Cleft Centre & Maxillo-Facial Department, Teaching Hospital, Karapitiya, Galle, Sri Lanka. Psychological status was assessed by the researcher by interviewing the subjects older than 5 years of age.
Results: There were 149 subjects more than five years of age, of which 79 (59.73%) were females ($p<0.05$). A total of 67 (44.97%) subjects had other clinical features associated with the cleft palate. There were 28 (18.79%) subjects with dysmorphic features, 21 (14.09%) with congenital heart defects, 18 (12.08%) with developmental delay. There were twenty five subjects (16.34%) with altered psychological status, of which there were seventeen females (68%) and eight males (32%). Fear to talk in public was the commonest problem reported and was identified among seventeen (68%) subjects. Aggressive behavior was reported among four (16%), other psychological problems included attention deficit disorder in one subject (4%) and unusual behavior in three subjects (12%) were reported.
Discussion: Cleft palate is a condition that causes significant psychological stress among affected individuals and families. Hypernasal speech, speech delay, disfiguring facial features and other associated birth defects are associated with increasing prevalence of psychological stress among cleft palate subjects. The results of this study clearly indicated female predominance of occurrence of cleft palate and higher incidence of other associated anomalies which may be a cause for higher incidence of psychological stress among cleft palate subjects.
Conclusion: Study results concluded that it is very important to address psychological aspect of cleft palate subjects with the concomitant correction of cleft deformity and other birth defects which will help to enhance the quality of life of the cleft palate patients.

Keywords: Cleft palate, Associated clinical anomalies, Psychological status, Sri Lanka

I. INTRODUCTION

Cleft palate (CP) is a congenital fissure in the roof of the mouth, resulting from incomplete fusion of the palate during embryonic development [1]. Extreme variability can be seen from a submucous cleft to a cleft involving the whole of the soft and hard palate. Orofacial clefting occurs in all races, both sexes and all socio-economic groups [2]. Untreated or incorrectly treated oro-facial clefts contribute substantially to long-term disability in children, as well as tremendous emotional and financial stress for affected families and individuals [2]. The treatment is a long term process and starts soon after the birth and continues to the end of the second decade of life. It requires a multidisciplinary approach with feeding and respiratory assessments, surgery for repair of the defect (this may sometimes involve multiple procedures), speech therapy, orthodontic management, autolaryngological and audiological assessment and management and paediatric follow up [2]. The reported incidence of cleft lip and palate has been increasing across the world. In a study from Denmark, Fogh-Andersen (1967) reported that, the incidence of cleft lip and palate had doubled during the last fifty years and tripled during the last one hundred years [3]. In a twenty eight year follow up study reported from Finland, Rintala et al., (1983) showed a rapid increase in incidence of cleft lip and palate [4]. Early development of the face occurs mainly between the fourth and eighth weeks of gestation and is dominated by proliferation and migration of the neural crest ectomesenchyme. The face develops from one median frontonasal, two maxillary and two mandibular prominences around the stomodeum [1,5]. Therefore, cleft palate is associated with cleft lip and other various craniofacial anomalies. The prevalence of the cleft lip with or without cleft palate and isolated cleft palate (oral clefts) varies in different populations with an overall incidence of oral clefts ranging from 1 in 750 live births in Asians to 1 in 2500 live birth in African Americans [6]. There are several genetic and environmental factors involved in the process of morphogenesis of the primary and secondary palates. Patients with oral clefts may also exhibit other anomalies. The associated anomalies include those affecting the cardiovascular, musculoskeletal, genito-urinary and gastrointestinal systems. Psychological problems are also seen more frequently among cleft palate subjects [7-9]. Most patients correctly treated for cleft palate have normal speech. Speech problems are more common and may be related to the type of cleft surgery, delayed treatment and poor compliance

with speech therapy. Velopharyngeal insufficiency (VPI) is a factor implicated in hyper-nasal speech. Syndromic cases are more likely to have delay in speech development [10]. Children with cleft palate demonstrate teeth anomalies such as dental malocclusion and abnormal eruption of primary and secondary dentition and abnormal positioning of teeth. Other issues include specific needs of the patient or the entire family regarding emotional issues, psychiatric problems and financial hardships [10].

The objective of the study is to evaluate the psychological status of cleft palate subjects in Southern Sri Lanka.

II. MATERIALS AND METHODS

The subjects were identified among those who are currently under review in the Regional Cleft Centre & Maxillo-Facial Department, Teaching Hospital, Karapitiya, Galle, Sri Lanka. Subjects who were over 5 years of age with cleft palate with or without cleft lip were selected for the study. All the subjects who consented to participate in the study were interviewed individually by the researcher and data were recorded in a structured information sheet. Psychological status was assessed by the designated psychologist according to the standard psychological protocol. Written informed consent was obtained from the subject or the guardian. Ethical clearance was granted by the University of Kelaniya for this study. Epi Info TM 7.1.0.6 software was used for the statistical analysis.

III. RESULTS

There were 149 subjects of more than five years of age with cleft palate, of which 31 subjects were associated with cleft lip (20.8%) (Figure 1). The majority (90.5%) were from southern province of Sri Lanka. While others were from Western, Sabaragamuwa and Uva provinces.

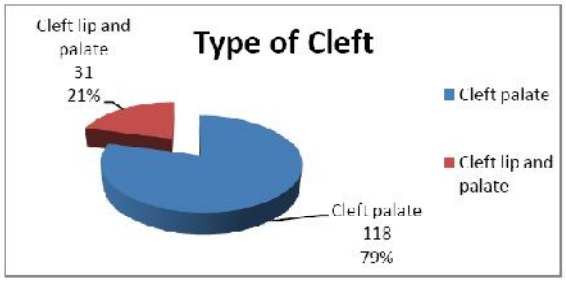


Figure 1. Type of Cleft

There were 79 (59.73%) females in the study sample showing female predominance of cleft palate subjects ($p<0.05$) when compared with national figures (Figure 2).

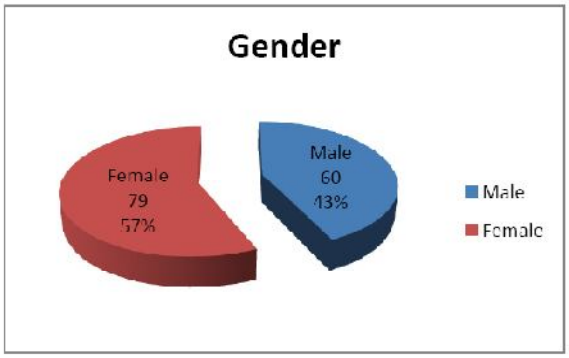


Figure 2. Gender of cleft subjects

The age of the study subjects ranged from five years to forty nine years. One hundred and three (69.1%) subjects were between five years and twelve years of age. The mean age of the study population was 12.15 years.

One hundred and two (68.45%) subjects of the study sample belonged to the category of low income (Rs. < 20,000 per month) families. Thirty eight (25.5%) subjects of the study sample belonged to the category of middle income (Rs. 20,000-40,000 per month) families. Only eight subjects (6.05%) of the study sample belonged to the category of high income (Rs. > 40,000 per month) families. Out of all, 83 subjects had multiple surgeries for their cleft repair. Multiple admissions to the ward and recurrent clinic visits adversely affected their life style as majority of parents of cleft patients were day earners who have lost daily wedge in most of the time.

A total of 67 (44.97%) subjects had other clinical features associated with the cleft palate. There were 28 (18.79%) subjects with dysmorphic features, 21 (14.09%) with congenital heart defects, 18 (12.08%) with developmental delay. There were 5 subjects with confirmed genetic syndromes including Down syndrome, 22q11 deletion syndrome and Pierre robin syndrome. Speech delay and hypernasal speech was more prevalent among cleft palate subjects of this study.

There were twenty five subjects (16.34%) with altered psychological status. There were seventeen females (68%) and eight males (32%). Fear to talk in public was the commonest problem reported and was identified among seventeen (68%) subjects. Aggressive behavior was reported in four subjects (16%) of which three were syndromic patients. Other psychological problems included attention deficit disorders in one subject (4%) and unusual behavior among three subjects (12%) were reported. Majority of them feared to talk in public because of their hypernasal speech, disfiguring nature and dental anomalies (Figure 3).

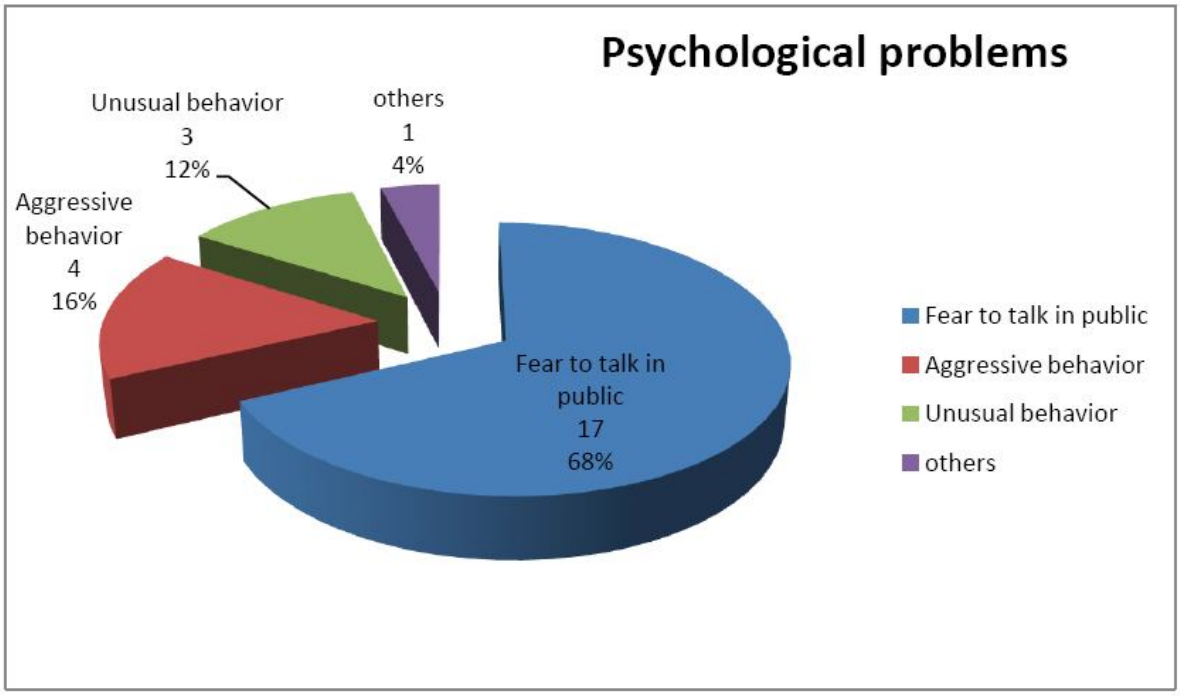


Figure 3: Psychological status of cleft palate patients

The IQ level was assessed by the designated psychologist using standard evaluation method. There were 38 (25.5%) subjects with lower than the average score (<100) of which IQ level of 20 (13.42%) cleft palate subjects were below 80. Majority of subjects (n= 120; 80.54%) are still attending school of which only four are attending special education unit/School. Five cleft palate subjects never attended school and twenty five have completed schooling. There were three subjects who have completed their university education and one still attending undergraduate course at a university.

DISCUSSION

Cleft palate is a condition that causes significant psychological stress among affected individuals and families. Hypernasal speech, speech delay, dysmorphic facial features and other associated birth defects are allied with increasing prevalence of psychological stress among cleft palate subjects. In Sri Lanka, cleft palate patients are treated by oro-maxilo-facial (OMF), plastic, paediatric and general surgeons. There were no routine psychological screening and counseling of cleft patients. The London dysmorphology database includes more than four hundred syndromes associated with cleft palate [2]. Most of the genetic syndromes are associated with altered psychological state of patients. The 22q11.2 deletion syndrome is one of the commonest identifiable genetic causes of cleft palate and altered psychological state is one of the late onset clinical condition among them [9, 11].

According to the department of census and statistics in Sri Lanka the sex ratio in the Southern province of Sri Lanka is 0.96 (Population and housing censuses in Sri Lanka, 2001) [12]. There was a significant different ($p = 0.0148$) in sex ratio of the study sample and the national figures (Southern province). This is compatible with data from Thailand, China and Australia [9].

According to the Department of Census and Statistics in Sri Lanka, 2009/2010, the mean monthly household income in the Southern province of Sri Lanka was Rs. 32,514 [13]. The income of the majority of families of the study subjects were belonging to lower income group indicating the higher prevalence of cleft palate among low income families. However, other available data around the world did not show any association between the incidence of cleft palate and socio economic status (Table 1). Adverse antenatal conditions mainly in the first trimester of pregnancy were considered a cause of cleft palate and other associated congenital anomalies by some authors [14]. Socio-economic status may adversely affect the antenatal care especially in rural areas of developing countries. Socio-economically deprived low income families are more likely to omit antenatal care because of the possible loss of daily income and the cost and distance to travel to access healthcare [14]. The relevance of these findings in this study population is not clear as no comparison with income distribution among the general population is possible.

Table: 1 Association between cleft palate with socio-economic status

Study	Association with low socio-economic status
Omo-Aghoja *et al.*, (2010)	Associate with low socio-economic status
Peter *et al.*, (1975)	Associate with low socio-economic status
Donkor *et al.*, (2007)	Associate with low socio-economic status
Amaratunga and Chandrasekera, (1989)	Not associate with low socio-economic status
Current study	Higher proportion of cleft palate cases from low income families

There has been no formal and consistent methodology involved in identification of associated anomalies among cleft palate subjects in previously published research. Some studies had excluded syndrome diagnoses and chromosomal abnormalities [15-17], while other studies included associated malformations as a part of syndromic or other associated genetic condition [18-22]. The present study population had other associated anomalies in 44.97% of cleft palate subjects which includes congenital heart defects, dysmorphic features, developmental delay, nervous system anomalies, hearing, visual anomalies altered psychological status and speech delay.

A systematic review of research on intelligence, achievement, behavior and personality of children with cleft lip and palate reported that there was a slightly lower mean IQ than controls [23]. There was a lower verbal IQ and language ability among cleft lip and palate children probably due to hearing loss and/or speech defect. These cleft subjects were more inhibited in the classroom and academically they were considered to be underachievers. General verbal and language deficiency in cleft children may be responsible for this academic failure. There was no excess of behavior abnormalities among cleft palate subjects although there was a higher incidence of psychological problems including excessive inhibition regarding being in public and talking. This systematic review defined cleft lip and palate subject as an inhibited shy and underachieving person [23]. A review article on the psychological aspects of cleft lip and palate by Turner et al., 1998 reported that the level of education, employment and social development of cleft lip and palate subjects were below that of the controls. They also reported that the psychological problems such as lowered self esteem and difficulties during social interaction were also more common among cleft patients [24]. The velocardiofacial syndrome or 22q11 deletion syndrome is one of the commonest syndromes associated with cleft palate. Psychiatric disorders including bipolar affective disorders, schizophrenia and attention-deficit disorder with hyperactivity [9,25] have been identified in all age groups of affected cases.

Conclusion

This study confirms that there is a female predominance in the cleft palate subjects in southern part of Sri Lanka. Furthermore, with the higher incidence of psychological status among cleft children, this study concluded that it is important to address psychological aspect of cleft palate subjects with the simultaneous correction of cleft deformity and other birth defects which will help to enhance the quality of life of the cleft palate patients.

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