International Journal of Advanced Research in Biological Sciences
ISSN: 2348-8069
www.ijarbs.com
DOI: 10.22192/ijarbs Coden: IJARQG(USA) Volume 5, Issue 7 - 2018

Research Article

DOI: http://dx.doi.org/10.22192/ijarbs.2018.05.07.003

Oral health status and suggestive preventive programs of physical disable children and adolescent

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Introduction

Improved standards of care available to the community together with the development of medical skills, more and more handicapped babies are serving the hazards of early infancy and childhood, so that the number of children handicapped by one or more conditions may therefore increase (Franks et al, 1974)

As members of the community the physical disable people will be depending upon the community to provide services to meet their health care needs, thus helping them attain a standard of living comparable to that other citizens (Mclver et al, 1979).

The development of such physical disable as mental retardation, cerebral palsy down syndram, autism and intellactual disability are present during childhood or adolescence and last a life time. They affect mind, body and the skills people use in the everyday of life, so that people with disabilties often need extra help to achieve and maintained good oral health (Nunn JH et al, 1993).

Oral hygiene is often consider as a problem source of the health inequalities in person with neuromotor and mental retardation, so the most common dental disorders (dental caries, gingivitis) which are affecting the normal population are to be seen in physical disable patient but these disorders may occur either more often with increase severity or at younger age than might be considered for normal person (Waldman HB et al, 2006).

Another dental problem that required attention among physical disable person is traumatic dental injury beside the psyhological, esthetic and function problem (Sultana et al, 2010).

Review of Literature

1.1.1 Physical Disable

1.1.2 Definition:

In 1980 the word health organization defined a handicapped word in the context of health experience as"a disadvantage from agiven individual resulting from an impairment or a disability that limit or prevent his fulfillment of a role that is normal (depending on age, sex, social and culture factors) for that individual.(Donaldson,1983).Another definition of physical disable persons as"one who over an appreciable period is prevented by physical or mental condition from full participation in the normal activities of their age groups including those of

a social, recreation, educational and vocation nature (Hennequin M Faulkso, 2000).

Oral health is an important aspect of health for all child and it is the more important for children with special health needs. Individuals with disabilities or illness receive less oral care than normal population, inspite of high level of dental disease among them(Manish Jain, Anmol Mathur, 2009).

The word health organization has defined physical disable as Disabilities is an umbrella term, covering impairments, activity limitations, and participation restrictions. An impairment is a problem in body function or structure; an activity limitation is a difficulty encountered by an individual in executing a task or action; while a participation restriction is a problem experienced by an individual in involvement in life situations. Thus disability is a complex phenomenon, reflecting an interaction between features of a person's body and features of the society in which he or she lives.(Solomon, Andrew,2011)

Classification of handicapped patient:

The disabilities affecting child may be grouped according to the time of the onset into two major categories(Persson,2000).

1. Physical disabilities that are developmental origin and those acquired later in the life ,sothe former category comprise condition such as mental retardation, cerebral palsy ,epilepsy ,autism and visually impaired that are present either at birth or are acquired during the development

2.Acquired disabilities generally result from trauma such as spinal cord head injury, from chronic disease including arthritis, cancer, diabetes, neurological disorder, psychiatric disorder.

1.1.2.1Physical Disabilities:

There are a number of different kinds of physically disable producing varying degree of incapacity, The most common kinds of particular concern to the dentist are:

- Neuromuscular disorders.
- Disorder of nervous system.
- Diseases of the joint.
- Musculo-skeletal proplem.

1.1.2.1.1.1 Neuro muscular disorders:

These are disorders of the perpheral motor and sensory systems and these illness involve one or more of the structure concerned with the segemental spinal reflex.(Nelson et.al,1987). Which are dividied into:

1. Paralytic Poliomyelitis.
2. Muscular Dystrophy.
3. Myasthenia gravies.

Muscular dystrophy:

Group of progressive chronic diseases of the skeletal (striated musules) characterized by the degeneration of muscle with replacement by fat or fibrous ,so after sufficient musculature has atrophied,deformity begin to occure. If deformity is sever enough,disability is the result (Lang BM Lipson,1983).

Also facial experssion impaired due to muscle weakness,lips are prominent due to weakness of the orbicularis oris to give the apperance of (tapir mouth) and patient cannot whistle or purse lips (Martens, 2000).

Figure (1) children with Neuro muscular disorders(Persson,2000).

1.1.2.1.2Disorders of nervous system:

A. Cerbral disorder.
B. Hydrocephalus .
C. Spine bifida.

A-Cerbral palsy:

Defined as astatic, non progressive neuromuscular condition composed of a series of syndromes that result from damage to the brain it is one of the most common crippling conditions of childhood, it is non specific disease but a group of disorders of varied causes.(Darby M,WikinsM,2005).

Classification of cerbral palsy:

The American Academy for Cerbral Palsy (AACP) classified cerbral palsy as follow as:

1) Physiological (motor) classified.
2) Topographic.
3) Etiologic.
4) Neuroanatomic.
5) Supplement.
6) Functional.
7) Therapeutic.

The two most popular and useful classification employ are physiologic and topographic (Aoki,2000).

Physologic(motor)classification.

This depend on the type of the motor involvement,theyinclude six categories:

Motor disorders:

A. **Spasticity:** This category account for approximately 50% to 75% of the cerebral palsied population .it is charcterized by exaggreated muscle contraction stiff and Jerky movement (Churchill L,2003)

B. **Athetosis:**This condition results from damage to the basal ganglion (Pool and Davis,1981).it characterized by relatively slow and seemingly purposeless or uncoordinated movement of the limbs or the entire body drooling ,and speech defects are also common ,damage to the brain involoves chiefly the extrapyramdial tracts .Muscles contract involuntarily with twisting movement of apposing muscle groups(Darby M,Wilkins M,2005).

C. Tremor: This condition result from lesion of the basal ganglion ,childern those affected may exhibit intentional or unintentional tremor depend on the degree of the involvement .it account 5% of cerbral palsied (Shobha,Tandon,2001).

D.Ataxia: This condition result from the lesion of the cerebellum affecting childern exhibit poor or complete lack of balance and an unsteady gaint(Darby M, Wilkins M,2005). characterized by uncorrrdination during planned or purposeful movement i.e that muscle response to a stimulus but cannot complete a contraction

E.Rigidity: This condition result from damage to the basal ganglion affecting persons displaymuscle stiffening when movements are attempt resistance to passive movement and in ability to bend. (Shobha,Tandon,2001).

F.Mixed: This condition involve two or more types appearing in the same person,it account (5-20)% of cerbral palsied population .(Darby M,Wilkins M,2003).

Figure(2) children with motor disorders(Aoki,2000).

The topographic classification of cerebral palsy :

Classification done according to the limb involvment include:

1.monoplegia :that are involvment of one limb .
2.paraplegia :that are involvment of two limb.
3.hemiplagia:that are involvment of both limbson the same side of the body.
4.triplagia:that are involvment of three limbs.
5.quadriplagia :that are involvment of four limbs.

6.diplagia:that are involvment of thelower limbsandminor involvment of upper limbs.
7.double hemplagia (HennequinMFaulkso,2000).

1.1.2.1.3disease of joints:

Arithritis:

Arithritis mean inflammation of the joints as are result of infection or auto-immune disease.there aremany kinds of arithritis,the main four type :

Fibrositis, gout, arthritis and rheumatoid arthritis(Persson et.al,2000).

Rheumatoid arthritis is the greatest crippler, usually causes sever disabilityby affecting several joint at the same time, characterized by by chronic inflammation affecting many joints with pain and progression limitation of movement.(Cawson,2005). heumatoid arthritis affects children in the developmental years it interference with dental growth and development ,inflammation of tempromandibular joint can slow or temporarily stop the growth of the mandibule, resulting in micrognathia and anterior open bite.(Lange 1983, Aoki,2000).

1.1.2.1.4 Musculoskeletal proplem:

A. Metabolic bone disease.
B.Amputation .
C.Genetic skeletal dysplasia.

A.Metabolicbone disease:

Rickets:

In childern defective absorption of calcium due to deficiency of vitamin D causes rickets .The essential feature of rickets is defective calcification under development of the skeleton (Cawson,2005).the main effects are brooding of the growing ends of the bone due to epiphyseal defects ,bending of the weakened bones deformities of the spine ,pelvis and legs result in reduced stature (Nelson ,1987).the child has large, prominent frontal bones which give the head an enlarged square appearance (Hennequin M Faulkso,2000).

B.Amputation:

Amputation is classified as congental(due to improper development),traumatic (due to accidents)or elective(in which the upper orlower extermitiesare removed by surgery because of congental ortraumatic conditions(Mistea AG,Karid AG,2011).

C.Gentic skeletal dysplasia:

It is a developmental defects affecting the skeleton contributes amajor portion of the short stature and skeletal deformities at all ages, they include dysplasia (disorders of the growth), dyostoses (malformation of the bone) idiopathicosteolyses (pathological resorption of bone and chromosoma aberrations with skeletal malformation (Nelson et.al,1987,Marten L,Mark L,2008).

1.1.2.2 Auditary handicapped (phyical disable)child:

Hearing difficulty is one of the most comman defects found in childern and adults, hearing loss rangesfrom partial to complet (Ahibora B,2000).when there is important of hearingto the extent that it has no practical value for the purpose of communication. Person is considered deafness when hearing is defective but functional without hearing and the terms “hard of hearing’’ or “partially deaf” (Shobha Tandon,2001).

1.1.2.3 Visual handicappied (physical disable):

A legally blind person is one who with the best optical correction can see less at 20 feet than aperson with normal vision can at 200feet (visual acuity is20/200).the partially sight person has visual acuity ranging from 20/70 to 20/200 in the better eye but have a residue of useful sight that makes itpossible to use this as the chief channel of learning and approach to the brain (Jindal M,Saif Khan;Hashmi S,2009).

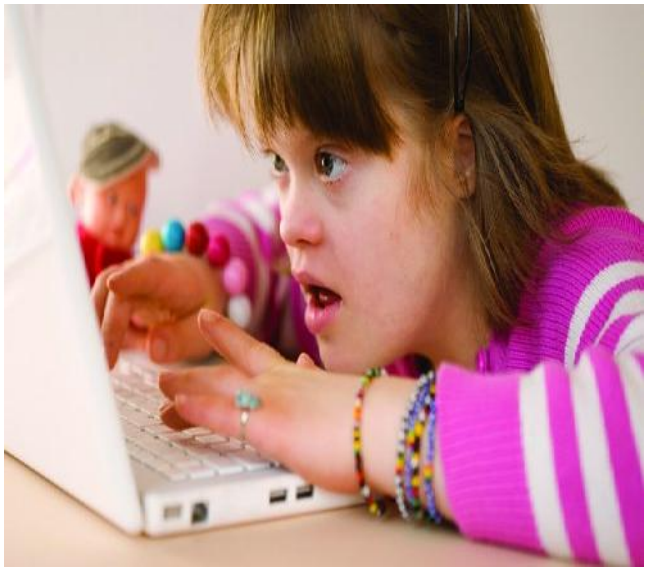
1.1.2.4 Down's Syndrom:

Down's syndrome (DS) was first described by John Langdon Down in 1866. He called the condition "mongolism" because of the distinctive skin fold, known as an epicanthic fold, in the corner of the eye. Lionel Penrose and others changed the designation to Down's syndrome (Rubin and Farber, 1999; Cummings, 2003). In 1959, Jerome Lejeune and his colleagues discovered that the presence of an extra

copy of chromosome 21 is the underlying cause of Down's syndrome and also was known as trisomy 21 (Cummings, 2003). It was the first chromosomal abnormality discovered in humans and has also been observed in other primate species, including the Chimpanzee. It occurs in 0.5% of all conceptions and one in 900 live births (Behrman and Klieg man, 2004).

1.1.2.4.1 Etiology of Down's syndrome:

The causes of Down's syndrome are unknown, but a variety of genetic and environmental factors have been proposed, including radiation, viral infection, hormonal levels, and genetic predisposition. Etiology of Down's syndrome To date the only factor clearly related to autosomal aneuploidy is advanced maternal age. In fact, a relationship between maternal age and Down's syndrome was well established 25 years before the chromosomal basis for the condition was discovered (Scriver et al, 2001; Cummings, 2003).
The incidence of trisomy 21 correlates strongly with increasing age that is young mothers have a low probability of having trisomy 21 children, but the risk increases rapidly after the age of 35 years. At maternal age of 20, the incidence of Down's syndrome is 0.05%; by maternal age of 35 the risk has climbed to 0.9%; and at maternal age of 45 years, 3% of all newborns have trisomy 21 .The risk of recurrence of Down's syndrome in subsequent children born to the same mother is 1% irrespective of maternal age.



Figure(3) children with Down's syndrome (Behrman and Klieg man, 2004).

1.2.1 Importance of Oral health:

Healthof an individual and health ofa society are recognized as being interrelated not only is a healthy human being necessary for a healthy society ,healthy society is nececcary for a healthy human being.(Doris J,Stiefel,2002).

Oral health is an important aspect of health forall childern ,and the most important for the children with special health needs .Individual with disabilities or illnesses receive less oral care than normal population ,inspite of the high level of dental disease among them.It has been reported thatdental tretment is the gretest unattened health need of the disabled child ,so that child with mentally disabilities have poor oral health as compared to their normal children which makes function of the oral cavity like eating ,swallowing ,speeching,chewing ,drollingdifficult for them result in malocclusion ,compromising esthetices and poor oral hygien so, good oral health is requring forthem because severity of medical condition and preceivedgeneral health are significantly correlated with dental functional status and severity of dental disease therfore,the children with disabilties the effect of dental disease on general health and function appears greater than for similar groups without disabilities .(Manish J,Anmooh Mathar,2009).

1.2.2Oral health status of physically disable children:

The most comman dental disordeds affecting the physically disable are:
1.dental caries .
2.gingival and periodental disease .
3.traumatized teeth.

1.2.2.1 Dental caries:

The word health organization(1988)defned dental caries as a bacterial disease of the dental hard tissues it begins with acid demineralization of the outer enamel surfaceand if not arrested or treated the dissilution of the enamel continuos into the dentine and pulp increase cavitation and lossof tooth substance so that dental caries is a multifactorial disease in which there is interplay of three principle factors which are the host(teeth),the micro organizm and their substrate (diet),in addition to another factors is the(time) must be considered in the etiology of the dental caries (Murry el.al,2005).the genetic factors may also be affecting susceptibility of the teeth and resistance to

dental caries which explain individiual varaition to dental caries even under identical controlled condition.(Murry el.al,2005).other defintion of dental caries is a slowly progressing, irreversible microbial disease of calcified tissues of the teeth, characterized by demineralization of inorganic portion and destruction of organic portion (Chandra and Chandra, 2000). At the crystal level initiation of the carious process may be inevitable but progression of a microscopic lesion to a clinically detectable lesion is not a certainty because in its early stages the process can be arrested and a carious lesion may become inactive. Is a slowly progressing, irreversible microbial disease of calcified tissues of the teeth, characterized by demineralization of inorganic portion and destruction of organic portion (Murry el, al,2003). At the crystal level, initiation of the carious process may be inevitable but progression of a microscopic lesion to a clinically detectable lesion is not a certainty because in its early stages the process can be arrested and a carious lesion may become inactive. However progression of the lesion into dentin can ultimately result in bacterial invasion and death of the pulp and spread of infection into the pulp and spread of infection into the periapical tissues, causing pain (Kidd and Bechal,2008).The development of dental caries is a dynamic process of demineralization of the dental hard tissues by the products of bacterial metabolism, alternating with periods of remineralization. (Cawson,2003).

1.2.2.2 Theories of Dental Caries:

Various theories have been proposed trying to explain, dental caries the early theories of dental caries are:
1)the Legend of Worm5000bc .
2)Endogenous theories
3) Exogenous theories which are divided into :
1-Millers chemioparasitic theory..(acidogenic theory).
2-Proteolytic theory.
3-Proteolysis theory.
4-Sucrose –chelatine theory.

1-Millers chemoparasitic theory (acidogenic theory).

In the 17th and18 th century, there emerged the concept that teeth were destroyed by acids formed in the oral cavity.
Robertson (1895) proposed that dental decay was caused by acid formed by fermentation of food particles around teeth.

2.Parasitic theory(septic theory):

- Dubos (1954) postulated that micro organisms can have toxic effects on tissue.
- Early microscopic observation of scrapings from teeth and of the caries lesion by Antoni Van (1632\1723) indicated that micro organisms were associated with the caries process.

3.Millers (chemo parasitic theory):

This theory was proposed originally by w.d.Miller in 1890.he made the significant observation that many organism can produce acid from the fermentation of sugar and showed that several oral micro organisms have this property .

Stage of chemo –parasitic theory:

First stage:is decalcification or softening of the tissue (preliminary stage).

Second stage : There is dissolution of the softened residue of the enamel and dentin.(later stage).

4.Proteolytic theory:

The evidence given by the acidogenic theory was considerable but it was not conculsive, and alternative explaination was given in the form of protolytic theory. Micro organisms invade enamel lamellae and the acid produced by the bacteria.

5.The proteolysis chelation theory:

- This theory was originated by Schatz and Martin in 1955 .it proposed that some of the products of bacterial action on enamel, dentin, food and salivary constituents can form chelates with calicum.
- A chelatation is aprocess in which there is complexing of the metal ion to form complex substance through coordinate covalent bond.

6.Sucrose –chelation theory:

Eggs-Lura(1967)proposed that sucrose it self and not the acid derived from it can cause dissolution of enamel by forming unionized calcium saccharates. So, the most acceptable theories of dental caries is chemoparasatic theories.(Krishna M,Dasar P,2010).

1.2.2.3 Caries Prevalences among Physically disable children and adolescents:

Many studies have been conducted indifferent partes of the world to determined the prevelance and severity of dental caries among physically disable children and adolescent.there are conflicting accountsof prevalence of dental disease in physical disable children. most of these studies have suggested that very little difference excits between the incidence and prevalence of the dental decay seen in the physical disable population andthese in the normal population .(Murry and Mcleod ,1973;Brown,1980).

In Iraq studies,Abbas et,al (1990)examined 49 physical disable persons at aged 10-19 years found that 14%of them were caries free with mean DMFT 3.68

In Daib et,al (1995) that are found total physical disable children had signficantally higher dmft value than total auditary physical handicappedin both sex where by the total physically handicapped male had significantally higher dmft value than total auditary handicapped male .The same relationship was true for the total females also the total physicallay handicapped had significantally higher dmft value than total visually handicapped children .while there was no significantally difference in mean dmft between total visual and total auditary handicapped children .

Dental caries experience in Down's syndrome has been controversial, despite the number of studies conducted over the past decade or more. Reports of studies have indicated low caries – experience in Down's syndrome individuals (Morinushi et al, 1995; Cogulu et al, 2006). These observations have been questioned by many researchers whether they are inherently resistant to caries or not. Other studies demonstrated little or no difference in their caries experience when compared with other groups (Cutress, 1971; Maclaurin et al, 1985; Yarat et al, 1999).

In Iraq, limited studies were conducted regarding dental caries severity among Down's syndrome. Faris (1990) reported a higher caries severity in primary dentition among Down's syndrome compared to control group, while the opposite was recorded in permanent dentition. Al-Saffar (2004) showed a lower caries experience in primary dentition among Down's syndrome children than normal children with no statistical significant difference.

In Indian study Jindal M,Ahamed M,Hashmi H(2009) in these study most of the blind student have examined were having poor oral hygien total 80 student have visual impaired when examined out ofwhich 44 (55%)were have poor oral hygien and among them 22.7%were having dental caries while in the studyof Ajami B,RezayY(2007)that are dental caries experience of children with hearing impairment was lower than that of children with mental retardation and visual impairment, so that filled component in the mental retardation was lower than viual impairment and hearing impairment which are indicating lower a mount of restoration treated relative to untreated caries lesions in mental retardation .the decay comonent of mean dmft+DMFTindex was the greatest component of the three groups.

1.2.2.4 Factors affecting caries prevalence in physical population.

1.2.2.4.1 Age.

Age ispowerfull variable that should always be taken in account in caries studies .age of the children was by far the strongest determinant of caries experience and increased caries with age should be interpreted as a result of being exposedto a number of unfavarable facrors over time ,so the irreversibility and acccumalative nature of dental caries may explain the increase in its rate and severity with age ,so that DMFT indices increased markelly in all physical children that have supported by several studies(McDonald R,Avery D,2004).

In Iraqi studies (Daib,1995) that are resultchildren with physical handicapped had higher dmfs value than auditary handicapped in all age group ,but only in the young age group as well as in the total sample in the physically handicapped males had significant higher dmfs value than auditary handicapped males .

In another Iraqi studies(Radhi,2009) the result of this study children with Down's syndrome dental caries has been reported to have high incidence in adolescent period .that are an increase not only the change in the oral condition but also because of negelected pattern in the physical handicapped childrend and propably a lack of health consciousness in the earlier period of the life (Behrman RE, Kliegman RM 2002).

1.2.2.4.2 Gender:

TheGender is another factor affecting in the dental caries ,that are between males and females of the signficant difference in caries prevalence many studies on different types of physical handicapped children have showen greater caries expereence in females than in the males (Murry,2003).this difference can be partialy explained through the earlier eruption of the teeth in the girles than in the males which are provide longer period of exposure of the teeth to the oral enviroment .

On the other hand there some studies which have shown no signficant difference in caries experience between male and females physically handicapped children (Nunn and Murry,2005).

1.2.2.4.3 Diet.

Dental cariesis afundamentally diet bacterial disease ,sugar is the most important dietary item in relation to the caries etiology (Shaw,2006). Many clinical,epidemiological and experimental animal studies have shown positive relation between suger and dental caries(Martin Sangune C,2006).howeverthe frequency of intake rather than the total amount of fermentable carbohydrates per day so, the diet is the critical factors in the development of dental caries (IvancicJokic N, Majstorovic M,2007).
Many physically handicapped children receive a high amount of the carbohydrate diet because their parents often try to please their child by providing sweets for him and establishing conditions that are lead to caries .the percentage of disabled children which have been taken carbohydrate containing food more than 7 times per day by many studies ,and also strong relation between daily carbohydrate intake and dental caries..(Goe LC, Baysac MA,2005).

1.1.2.3.4 Socioeconmic status.

The influence of socioeconmic status on caries experience has been reported in the servuyon healthy children .A number of studies have been pointed out to the inverse relation between caries experience among childrens and different social indices ,social class,in comof the family, parents occupation, parents level of education (Sogi GM,Bhaskar DJ,2002).

Social and economic factors that determined utilization of dental care by “normal person” also serve as for disable persons.(Lukacs JR, Largaespada LL,2008).many studies found that the mean family income of the disabled children was lower than the national average and also many famlies have an extra financial due to medical costs ,education expenses,and transportation costs which are higher for the children with physical disable (Weddell JA, Sanders BJ, Jones JE,2004).

1.1.2. 4.5 Hypoplasia:

Hypoplasia is another factor affecting in the prevalence of dental caries that are amelogenesis occurs occures in two stages .in the first stage the enamal matrix forms and in the second stage the matrix undergoes calcification sothat the systemic or local factor that interference with the normal matrix formation cause enamel surface defects and irregularties referred to as “enamel hypoplasia” and enamel hypoplasia or enamel hypocalcification which are reported to be susceptible to dental caries . (van Houtem CM, de Jongh A, Broers DL,2007).

Defect of enamel and dentine are more prevalent when the physical disable child are association with developmental abnormalities many clinical investgations have been under taken to determine the relation ship between hypoplastic defects of enamel and systemic disabilities(Cawson ,2005)

Risk Factors For Dental Caries in disabled child:

- Dietary constituents and form.
- Liquid oral medicine.
- Poor oral clearance/ stagnations.
- Resistance to mouth cleaning.
- Infrequent attendance.
- Attitude of careers.

1.2.3 Gigival health and periodental disease:

Periodental disease(definition).

periodental disease has been defined as any pathological process affecting the periodental tissues but almost invariably refers to a group of inflammatory conditions of the supporting tissues of the teeth that are caused by bacteria and includes two basic forms which are the common diseases found in the humans, gingivitis and periodontitis as well as other less common periodontal diseases (Haake, 2002).

Gingivitis is an inflammatory condition of the gingiva which is almost always present in all form of gingival disease, because bacterial plaque, which causes inflammation and irritating factors which favor plaque accumulation are often present in the gingival environment. In general, gingival disease is classified into two major forms, dental plaque induced gingivitis and non plaque induced gingivitis (Delaney and Keels, 2000; Haake, 2002). Periodontitis is the most common type of gingival disease and result from extension of inflammatory process initiated in the gingival to the supporting periodontal tissues (Delaney and Keels, 2000; Haake, 2002). The prevalence and severity of gingivitis increased with age beginning at approximately 5 years of age reaching their highest point in puberty then decreased gradually but remaining relatively high throughout the life (Jenkins, 2001). laque is the main local factor related to the variation in the prevalence of periodontal disease, it can be defined as the soft deposits that form the biofilm adhering to the tooth surface or other hard surfaces in the oral cavity, its broadly classified as supra gingival or sub gingival based on its position on the tooth surface .Dental calculus represents the mineralized bacterial plaque and can be recognized as supra gingival or sub gingival calculus (Lang et al, 2003).

1.2.3.1Epidemiology of Periodontal Disease among Physically disable children and adolescents:

The incidence of gingival and periodontal disease among physical disable individuals varies considerably with the degree and type of physical disable condition(Van Houtem CM, de Jongh A, Broers DL,2007)..

The main factor related to gingival\periodontal problem in physical disable individuals is the inadequacy of plaque removal from the teeth .motor coordination problem and muscular limitation in neuromuscular disabled individuals and the difficulty in understanding .the importance of oral hygiene in mentally disable individuals have resulted in the progression of the inflammatory disease(Behrman RE, Kliegman ,2004).

Few studies have compared the periodontal disease of the individual with different type of the physical disable children these studies are Gugush(1991) conducted a study in Pretoria to compare oral health status of three group of impairments ,visual ,physical and auditory handicapped there were significant difference for the presence of calculus ,the physically disabled individuals consistently indicated the highest proportion of bleeding ,calculus accumulation and shallow pocket.

In Iraqi study Daib et,al (1995)that are total auditary handicapped had signficantly lower periodontal index than total visually and physically handicapped patient .the distribution of physically visually and auditory handicapped according to severity of the disease so the auditary handicapped had mild inflammation which was significantly higher than visually 9.09% and physically handicapped which are 4.23%and the same relation found concerning both sexes ,while 66.47%of the auditory handicapped had moderate gingival which was significantly lower than the physical handicapped 80.42% and the same relation was present for males while of females the percentage of physically ,auditory handicapped who had moderate gingivitis was no signficantly higher than visually handicapped females and sever gingivitis was present in small proportion of auditary handicapped (1.63%) which is significantly lower than visually which are about 9.09%and physical handicapped (15.34%)and the same relation was true for the male.

The prevalence of periodontal disease in Down's syndrome subjects points to (bruxism, malocclusion, tongue thrusting, poor oral hygiene) and systemic factors (poor circulation, decreased humoral response, general physical deterioration at an early age and genetic influences) combining to influence disease susceptibility. Gingivitis is exacerbated by excessive plaque formation and difficulties in establishing effective tooth-brushing habits. Progress to periodontitis and early tooth loss are frequent consequences (Morgan, 2007).

In Iraqi study Dr.Radhi*(2009)*The study revealed that 100% of children with Down's syndrome were affected by gingivitis among study and control group. Data revealed a higher mean of plaque index among the study group compared to the control group, Total males and females of the study group had higher mean plaque index at each age groups compared to the control group, Moderate type of gingivitis was the most common type among the study group compared to the control group. Total males and females had a higher mean of gingival index among the study group than the control group.

In Indian study (Jindal M,Ahamed M,Hashmi,2009) in this study most of the blind students examined were having poor oral hygiene. total 80 visually impaired students were examined out of which 44(55%) were having poor oral hygiene and among them 22.7%were having dental caries .twenty nine percent of blind students were having fair oral hygiene and among them 57%developed dental caries which was highest .this indicates that blindness alone is not a significant risk factor for higher prevalence of dental caries and periodontal disease and hence by taking care of blinds in education set-up associated with appropriate training can result in acceptable health status similar to normal population .

1.2.3.2 Soft diet and periodontal disease:

Physical character of the diet may be important factor in the etiology of periodontal disease (Carol B, Sandra G, Patricia S, Kristin T, James R, Tammar H,2004). Numerous experimental studies in animals have shown that the physical character of the diet may play some role in the development of gingivitis (Dinesh Rao,Hegde Amitha,2005).

Soft diet may lead to plaque and calculus formation (Al-Qahtani Z, Wyne,2004)while hard and fibrous food provide surface cleansing action and stimulation which result in less plaque and gingivitis, so the diet which are more chewing and use of the masticatory function can reduce the periodontal disease considerably.(Solomon, Andrew, 2011).

Handicapped population have tendancy to eat soft food especially patients with neuromuscular disorder (Murryj, Nunnj, Steelj, 2003).

In motor disabilities if the motor deficit affects the oral and pharyngeal musculature ,mastication difficulty may requried the patient to eat soft diet.(Manish Jain, Anmol Mathur ,Leena sawla,2009).

1.2.3.3 Malocclusion and periodontal disease:

Malocclusion exerts varied defects in the etiology of gingivitis and periodontitis disease,abnormal occlusion usually results in an increase in the number of stagnation areas of the m,also irregular alignment of the teeth make plaque control difficalt to be removed (Barnett ML,2006).

Many investigation have reported that malocclusion occure more often in physically handicappied than in the healthy population (Orlend et.al 1987).In many study 40% of the children showed malocclusions Class II malocclusion was more seen in MR and VI children. Malocclusion can complicate the child's disability, resulting in dental trauma (e.g. a large over jet predisposes the children to trauma in those with seizures, periodontal disease (promoted by crowding or eruption problems), functional problems (mastication, drooling, speech impairment and even temporomandibular joint dysfunction (Al-Qahtani Z, Wayne AH, 2009).

Figure (4) Developmental defects from high fever or medications can create under–mineralized, decay–prone enamel(Barnett ML,2006).

1.2.4 Traumatic dental injury:

Traumatic injury may varied in severity, they may result in a simple loss of enamel or it may lead to multiple type of trauma affecting both soft and hard oral tissue ,the etiology of traumatic dental injury was mostly due to struck or forces to ward teeth or soft tissue (Rahul Bhowate ,A Dubey,2005).

In Iraqi study Daib et,al (1995) the prevalence of visally ,physically and auditory handicapped with traumatized teeth were 31.31%,23.28% and 11.87% repectively,the percentage of auditory handicapped affected by trauma was significantly lower than physically and visually handicapped.

Although the percentage of handicapped male with traumatized teeth was higher than female in all age groups of the three groups of handicapped separately ,but the difference were not significant.

The truma to the teeth may be more prevalent if patient trips ,fall orbums into objects frequentaly blind child can be expected to display a higher frequency of traumatic fractures of their teeth because blind child tends to be more prone to accidents than a child with a normal vision.(Jindal M,Ahamed M,2009).

Figure (5) Occurs more frequently in people with mental retardation, abnormal reflexes, or muscle incoordination(Solomon, Andrew,2011).

1.2.5 Missing Permanent teeth Delayed Eruption and Enamel Hypoplasia:

Are more common in people with intellectual disability and coexisting conditions than in people with intellectual disability alone.

- Examine a child by his or her first birthday and regularly thereafter to help identify unusual tooth formation and patterns of eruption.
- Consider using a panoramic radiograph to determine whether teeth are congenitally missing. Patients often find this technique less threatening than individual films.
- Take appropriate steps to reduce sensitivity and risk of caries in your patients with enamel hypoplasia(Batshaw ML, Shapiro B, Farber MLZ,2007).

Figure (6) Variations in the number, size and shape of teeth((Barnett ML,2006).

1.2.6Damaging oral habit:

Are a problem for some people with intellectual disability. Common habits include bruxism; mouth breathing; tongue thrusting; self-injurious behavior such as picking at the gingiva or biting the lips; and pica, eating objects and substances such as gravel, cigarette butts, or pens. If a mouth guard can be tolerated, prescribe one for patients who have problems with self-injurious behavior or bruxism. (Weddell JA, Sanders BJ, Jones JE,2004)

Barriers to oral health and assessing care:

Dental problem were identified as among the most prevalent unmet need by case managers of reginal centers providing community servies for persons with development disabilities. (Manish Jain,Anmol Mathur,Leena sawla,2009).

Following are the barriers to the oral health care of special children :

1. Fear and anxiety :several studies indicate a high level of fear and anxiety in person with disabilities.extreme fear was inversely related to frequency of dental visits and perceived oral health status (Crall JJ,2007).
2. Dependency: persons with severe physical and mental disabilities who are dependent on caregivers for daily oral care characteristically have poor oral hygiene and a greater prevalence of periodontal disease.(Larry Lawton ,2002).
3. Financial barriers: persons with severe physical and mental disabilities, are unable to pay the cost of care ,deprived with respect to income ,has high rate of unemployment and no dental insurance.

4. Poor skills: since most of the mentally disabled children are not able to use tooth brush in a proper manner and unable to perform oral hygiene procedures adequately which leads to poor oral hygiene and periodontal problems(StfanovskaE,NakovaM,Radojkova V,2010).
5. Unwillingness by dentist: private practioners do not feel to treat the patient with mental retardation or with some other disabilities as it requires more time and efforts. Patients with such complex needs require the services of special programs ,clinics, and facilities staffed by personnel with advanced training and experience(Doris J ,2002).
6. Ability to accept treatment:this dependon number of factors like moo,motivation,ability to think logically ,accept and understand the treatment plan and ability to cooperate with dental treatment .they have less ability to accept the treatment (Darbv M ,Wilkins E,2005).

Preventive dental treatment consideration:

Oral health is integral part of total health ,not an isolated element .prevention of oral disease and infection is the key to the oral care of persons with disabilities .thus dental care provider must manage the disabling condition and modify treatment as necessary in order to deliver quality dental care and preventive oral health protocols(Van Houtem CM, de Jongh A, Broers DL, van der Schoof M, Resida GH,2007).

1.Pre- treatment assessment: Professionals should take proper medical history ,and should have proper consultation with their vision to evaluate their medical status . Information should be carefully collected by their caregivers or the guardian regarding their oral hygiene practices at the time of the first appointment only; the preferred timing and length of the appointment depends on the individual particular disability (Doris J ,2002).

2.**Patient management**: The appropriate method of behavior management must be determined; modalities may range from ensueing a calm ,friendly atmosphere ,to behavior modification ,to use of pharmacological sedation and physical restraints ,and combination of strategies (Siklos S, Kerns KA,2008). to do proper management ,one should keep following in mind :

- **Establish a relaxed environment :**

To relax the patient ,dental staff must greets and welcome the patient ,avoid keeping the instruments with dangerous outlook,openly which might scare the patient .

- **Communication skill:**

Communicating in a soft voice and using a gental touch will go a long way toward helping the patient relax .communicating with a person who has special needs also often requires patience(Larry Lawton ,2002).

- **Tell show do:**

Before doing any step of the procedure,tell the patient and show the instrument going to be use in the procedure.start with least fear promating object or procedure and move towards the higher grades.

Figure (7) Head of Dental and Eye Care Services(Siklos S, Kerns KA,2008).

- **Use of suitable aids:**

An adjustable mouth prop will allow the patient to open the mouth for long period of the time it will also prevent the truma to dentist finger .These patient may require more stabilization of the head .Oral hygiene procedure is best achieved for mentally handicapped child with child lying supine on the floorcough or bed and the head supported on the mother lap(Kumar S, Sharma J, Duraiswamy P, Kulkarni S,2009).

3. Systemic prevention of oral disease: Full use must be made of safe,effective and readily applied chemotherapeutic agents as flouride and chlorhexidine,so the preventive program must be :
1.Simple to be use.
2. Low in cost.
3.Have the full cooperation of administrators ,medical and nursing staff,personal care attenants and clients(Manish Jain,Anmol Mathur,Leena sawla,2009).
The resulting benefits will be far reaching in terms of reduced morbidity,decreased pain and suffering and savings in cost through reduced need for treatment ,enhanced well-being social acceptanceand quality of life of the individual(Darbv M Wilkins E,2005).
4.Oral health Preventive Protocol: The oral health status of these group with disabilities should be improved by hightened awareness of the fundamental need for effective preventive from earliest age through pediatricians,health visitors ,community and primary care teams.

1. Oral health education :which are includes:
a. All programmes of oral health promotion for children with disabilities should have specific,measurable ,appropriate,realistic and time related (SMART) objectives.the objective should include policy development,improved availability of healthy choices ,improvements in oral hygiene skill and provision of services (Larry Lawton,2002).
b.Diet: the role of sugar in promoting the the dental caries process has been derived from numerous epidemiological ,laboratory,and clinical studies .Abalanced diet is essential for nutrition as well as a part of the preventive programfor the handicapped children .the outcomes of several clinical studies show that chewing xylitol containing diet reduces caries and mutans streptococci level (Hayes C,2010).

c.All programm activities should have an educational component, and an oral health assessment should be included as part of general health assessment.

and oftenneed a help of their caregivers ,some studies have shown that persons with disabilities show significant reducation in plaque and gingival index through mechanical control of plaque (Kumar S, Sharma J, Duraiswamy P, Kulkarni S,2009).

2.Home Dental Care:

The instrucation and home care regime of the physically disable patient will depend on the type and severity of the disability.The individual who has a mild physical or mental disablity can be taught a simple brushing such as roll method.

It should begin in infancy; The dentist should teach the parents to gently clean the incisors daily with a soft cloth or an infant tooth brush.

Oral Hygiene Devices include:

1-Modifying tooth brush handles.
2-Electric tooth brushes.
3-Floss-holding devices.
4-Interproximal brushing.

1.Modifying tooth brush Handles:

If the patient has adequate dexterity to produce the small strokes needed to brush properly, a manual tooth brush may produce satisfactory results even if the patient has a weakened hand grasp or uses orthotic splints or other adaptive appliances as bicycle grips ,tennis ballsand styrfoam mold(Darbv M,Wilkins E,2005).

In a well-controlled study of children with cerebral palsy who received modified tooth brushes, plaque removal was increased by 28% to 35% over that achieved when conventional tooth brushes were used. (Stefanvskva E,Nakova M,Radojkova V,2010).

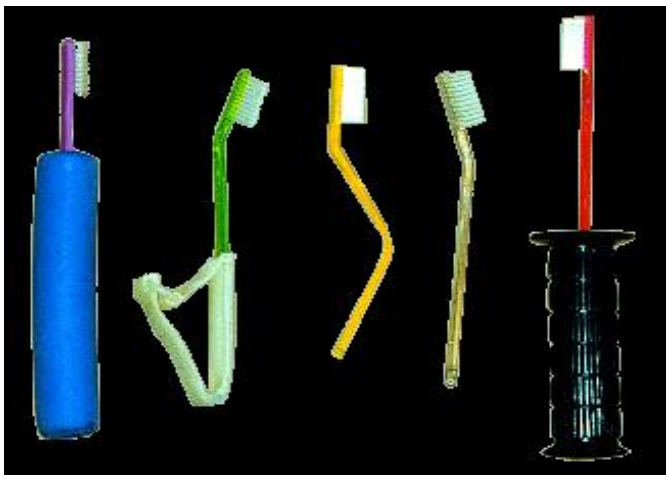


Figure (8) Modifying tooth brush Handles(Stefanvskva E,2010)

2.Electric tooth Brushes:

They are used in Compromised patient, Muscular Dystrophy patient, but the devices cannot hence be universally recommended for 3 reasons:-

- Their increased weight.
- The difficulties in using their on/ off switch.
- An overzealously used electric tooth brush can cause considerable damage to the hard and soft tissue in a short time (Mulligan R,2011)
-

Figure(9) Electric tooth Brushes(Mulligan R,2011).

3.Floss Holding Devices:

These devices used if the patient has the necessary interest and skills ,flossing can be taught or reinforced ,a floss holder can be a usefull devices if the patients manual dextertity is limited,or a mechanical flossing is also acceptable.(Manish Jain, AnmolMathur, LeenaSawla ,2009).

4.Interproximal Brushing:

They require fine motor skills therefor preassembled interproximal brushes for disabled patient are advisable.

The use of inter proximal brush is often beneficial in :

1. If the gingival recession has occurred to such an extent that he papilla no longer fills the interdental space.
2. In spaces where adjacent teeth are missing(Liu H,Chen C,2010).

Dentifrices:

Many type of dentifrices have been studies for their effectiveness to remove dental plaque and debris with a tooth brush but the fluoriated Dentifrices have been given the greatest attention during recent studies as caries preventive agent (Edwards S,2001).

A low –foaming tooth paste may be advised if the individual is unable to tolerate the foaming action or unable to spite out;additionally dipping the tooth brush into fluoride mouth wash and then brushing the teeth in the usual way will ensure that the teeth will benfit from the caries preventive effects of fluoride ,or using flouride gel.A regular tooth paste should be used only for patients who can expectorate Advice the caregiver to use a disclosing agent to visualize plaque biofilm so using a disclosing agent will ensure that procedure is being completed properly(van Houtem CM, de Jongh A, Broers DL, van der Schoof M, Resida GH,2007).

Plaque control:

It can done by mechanical means or chemical means Mechanical Plaque control:

The mechanical removal of dental plaque from tooth surfaces have conclusively been demostrated to be an effective method of controlling dental caries(Lansing, Michael J,2009).the most dependable mode for controlling plaque is by mechanical cleansing with tooth brush and cleaning aids (Stefanovska E,Nakova M,Radojkova V,2010). Howerever most of the mentally disability are not able to handle tooth brush properly and oftenneed a help of their caregivers ,some studies have shown that persons with disabilities show significant reducation in plaque and gingival index through mechanical control of plaque (Kumar S, Sharma J, Duraiswamy P, Kulkarni S,2009).

Chemical Plaque control:

Use of chlohexidine ,the treatment of choice for gingivitis ,is indicated in developmentally disabled ,medically compromised and dependent populations

who are unable to remove plaque by mechanical mean (Drab M ,Wilkins E,2005).Various studies have demonstrated that chlorhexidine is well tolerated by persons with a disability .for persons unable to use chlorhexidine as a mouth wash ,the agent can be effectively swabbed on a tooth brush ,on used as a gel Acceptance and compliance by clients and caregivers are the key to successful administration (.Persson RE, Truelove EL, Leresche L,1991).

3.Flouride:

The benfit of the fluoride for the prevention and control of dental caries is well documented.Special emphasis should be played on ensuring adequate systematic fluoride for disabled patients.

- Dentists should first determine the concentration of fluoride in patient daily water supply.
- If Fluoride level is between (0.7 – 1.0 ppm), no supplementation is normally required.
- If fluoride level < 0.7 ppm, various forms of fluoride supplementation is necessary (i.e. drops, tablets & rinses)
- Dentifrice containing a therapeutic fluoride compound should be also used daily.

- Clinician suggests:

1- Daily regimen of rinsing 0.05 % sodium fluoride solution

2- Nightly application of a 0.4 % stanous fluoride brush-on gel has also been successfully used to decrease caries in children.

If the patient will not tolerate the use of tooth paste, then a toothbrush dipped in fluoride mouthwash (0.2% sodium fluoride) as a part of mouth cleaning routine, will deliver an equivalent amount of fluoride but in a vehicle that the patient may find more acceptable for professional use fluoride varnish are the safest and the most practical method for the patient with physical disabilities(Edwards S,Darby M, Wilkins E2005).

4. Preventive Restoration and treatment need:

1- Pit & fissure sealants .

Sealant application may be more difficult in some compromised patient, because it may be more difficult to control intraoral moisture contamination, salivary pooling is often seen in **Cerebral palsy & muscular dystrophy** patient because they have swallowing difficulties for the short time needed to apply. To aid in Moisture control, the patient should be seated upright rather than reclining position. For the younger patient.

2- Amalgam or long-wearing composite to prevent further breakdown & decay.

3- Stainless crowns with severe bruxism and interproximal decay to increase the longevity of the restorations so that restoration of the dentition to its normal form should consider the emergency treatments like relief of the pain ,pulpal abcess drainage and extraction of the grossly destructed teeth.

5.Orthodontic treatment :

Orthodontic tretment for the children with disabilities has long been neglected ,and this treatment need should be taken into account in future planning of oral health care(Al-Qahtani Z, Wayne AH,2009).

Individual with Physical, Medical, Mental or emotional problems often have a greater need for dental care than their healthy counterparts. This may be because the disability itself has oral manifestations, but more commonly it is due to :

- The limited capabilities of the individual or the family members to understand and to perform important oral hygiene tasks.
- A lack of ability to perform dental care .
- Assessments should be made of patient's sensory, Cognitive and functional abilities and be used to customize a preventive plan.
- Dental preventive procedure such as sealant, fluoride's and chemical plaque control should be considered for each patient as a part of any treatment.
- In the disabled population has been shown to develop gingival/periodontal disease .If dental care and health awareness is instituted early and supported by parents or caregivers ,then home efforts or complicated treatment needs can be kept to a minimum.
- Tooth brushing should be performed by the parents or supervisor for children with physical disability.
- Chlorhexidine is effective antimicrobial solution that like to be a relative for mechanical tooth brush for disabled patient.
- A significant differences were found between the number of handicapped children and

adolescents affected by traumatic dental injuries among three groups of handicapped studies .By which the number of affected handicapped were significantly lower in auditory rather than physically and visually handicapped

Conclusion

Individual with Physical, Medical, Mental or emotional problems often
than their healthy counterparts. This may be because the disability itself has oral manifestations, but more commonly it is due to :

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Suggestions

1.Emphasized the importance of the behaviour of family and institutions towards people with physical disability in order to let a project of primary preventive .
2.Educational programs are needed to be intiated for center staff,parents and the handicapped to improve dental health knowledge by which reinforce desire behaviour and change poor dietary habits.
3.Planning educational programmes to motivate the handicapped chidren as well as parents and center staff for proper oral hygiene measures.
4.Implementation of an efficient preventive program ,which include adequate systemic flouridation along with other for topical flouride.he denta
5. Better orientation of the graduating and practicing dentists to play an important role in improving the dental health of handicapped children.
6. Language signs (hand signs) must be available to the dentists who work in the institutes so that they can communicate easily with the deaf patient .

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DOI:10.22192/ijarbs.2018.05.07.003	

How to cite this article:
Israa M. Dawood ,Mohammed Al-Qaisi. (2018). Oral health status and suggestive preventive programs of physical disable children and adolescent . Int. J. Adv. Res. Biol. Sci. 5(7): 54-71.
DOI: http://dx.doi.org/10.22192/ijarbs.2018.05.07.003