

Oral health preventive protocol for mentally disabled subjects – A review

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Abstract:

Background: About 500 million people worldwide are disabled. Nearly 2.1% of population of India is suffering from one or other kind of disability. Mentally disabled form 0.2% of total population and constitute 10.2% of total disabled. They have been reported with poor oral health status than the general population. Preventive dental care for such patients should be considered more important than the general population. **Overview:** This article discusses the oral health status of mentally disabled to understand the importance of good oral health for such patients. It also discusses various preventive measures that can be taken to improve the oral health such as plaque control, fluoride application, application of pit and fissure sealant, etc. along with diet counseling and health education to caregivers. **Article focuses on barrier in accessing dental care and various patient management techniques such as establishing a relaxed environment, communication skills to make the treatment acceptable for such pupils.** **Conclusion:** It is utmost important to provide preventive dental care to such patients by overcoming the barrier which obstacles it. Before motivating the patients and caregivers, it is the dentist who has to be motivated first in fulfilling special health care needs of patients resulting in improvement of quality of life.

Key words: Mentally disabled, Preventive Protocol, Down syndrome, Oral health status.

Introduction:

Health of an individual and health of a Society are recognized as being interrelated. Not only is a healthy human being necessary for a healthy society, a healthy society is necessary for a healthy human being.

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Oral health is an important aspect of health for all children, and is all the more important for children with special health needs. Individuals with disabilities or illnesses receive less oral care than the normal population, inspite of the high level of dental diseases among them. It has been reported that dental treatment is the greatest unattended health need of the disabled people. (1) The primary aim of dental services for disabled people should be to prevent dental diseases, which require proper planning and implementation of services.

The World Health Organization has defined a handicapped person as “ One who over an appreciable period is prevented by physical or mental conditions from full participation in the normal activities of their age groups including those of a social, recreational, educational and vocational nature”

Mental retardation has been defined by the American Association of Mental Deficiency (AAMD) as “Sub average general intellectual functioning which originates during the developmental period and is associated with impairment in adaptive behavior.” The AAMD classifies retardation into four categories according to their intelligence quotient as mild, moderate, severe or profound retardation. An individual is classified as having mild mental retardation if his or her IQ score is 50-55 to about 70; moderate retardation, IQ 35-40 to 50; severe retardation, IQ 20-25 to 35; and profound retardation, IQ below 20-25. (2)

Down's syndrome also called trisomy 21, is a chromosomal disorder. The IQ level of patient with Down syndrome is recorded as 25 – 50 which often termed as severely retarded. (3) It is the most common genetic cause of mental retardation.

The oral health of the disabled may be neglected because of the disability condition, a demanding disease or limited access to oral health care. Moreover, because of their level of function and their limited ability to undergo an oral examination, the disabled present specific challenges when their oral health is assessed. (4)

Lack of services to these growing segments of population is the actual matter to worry and is the major drawback of dental service. Literature on prevention of dental diseases for mentally disabled subjects is very scarce as compared to that of normal population. So, the purpose of this review is to discuss various oral health preventive

protocols along with their importance in the life of disabled.

Epidemiology:

The disabled form a substantial section of the community, and it is estimated that worldwide there are about 500 million people with disabilities. (5)

According to National Sample Survey Organization report, the number of disabled persons in the country was estimated to be 18.49 million during July to December, 2002. They formed about 1.8 per cent of the total population. Mentally retarded population accounts for 0.44 million individuals and 11.34% of total disabled. The proportion of employed among the mentally retarded are the lowest at 6 per cent, according to NSSO. (6)

Down syndrome in India occur at a rate of 1.4 per 1,000 births. It is found to occur 1 in 750 births. (7) It is estimated that more than 30,000 babies are born with Down's syndrome every year in India. (8) Cerebral Palsy cases accounts for 0.002% of total population of India. (9)

Oral health status:

Mentally retarded population has found to have poor oral hygiene, greater prevalence of periodontal disease and higher caries prevalence. (10)

Poor oral hygiene: Nicolaci AB and Tesini DA have observed that among the handicapped individual, mentally disabled shows high prevalence of poor oral hygiene and severity of handicap reflects the oral hygiene status. Lack of proper oral hygiene has been suggested to be principal cause of periodontal disease in individuals with handicap conditions. (11)

Reason for poor oral hygiene in disabled children has been attributed to less ability to understand instructions, low powers of concentration and lack of motor skills and innate skills and lack of manual coordination. (12)

O.O. Denloye found high OHI-S score at different age group of non-institutionalized as compared to institutionalized while Tesini found reverse of it. According to OO Denloye better oral hygiene in institutionalized group may be the reflection of better supervision of children by the nurses in charge of their welfare. (13)

High prevalence of periodontal disease: High prevalence of periodontal disease and the greatest treatment needs were detected in subjects with Down syndrome compared to normal and other disability group. (10, 14) Odds ratio for poor oral hygiene and periodontal status were significantly higher among Down syndrome population than those of cerebral palsy. (15) Some studies report an incidence of periodontal disease to be between 90 and 96% of adults with Down syndrome. This is thought to be related to a lowered host immune response due to the compromised immune system in Down syndrome. (16, 17)

Higher caries prevalence: Several studies has shown high rate of dental caries among the mentally disabled population than their normal counterpart. (10, 18, 19) According to Mary E et al., people with moderate and mild mental retardation had the highest percentage of dental caries (75% and 60.5%, respectively). (20)

Manish Jain et al. has recorded significantly higher DMFT score among subjects of Down syndrome than those

of cerebral palsy. (10) While Tannenbaum reported less caries occurrence

in children with down syndrome as compared to other mentally retarded. (21)

Caries seems to be less prevalent in institutionalized down syndrome patients with mental retardation than in the population at large. (22) However, there is the conflict regarding caries prevalence in the subjects of Down syndrome. Some studies show less prevalence of caries (22-23) while some shows higher rate of dental decay among the subjects of Down syndrome. (10, 24, 25)

Importance of oral health:

Oral health is an integral part of overall body health and well-being. Good oral health improves the quality of life. Patient with mental disability have poor oral health as compared to their normal counterpart which makes function of the oral cavity like eating, swallowing, speech, chewing, drooling difficult for them resulting in malocclusion, compromising esthetics and poor general health.

Good oral health is requiring for them because severity of medical conditions and perceived general health are significantly correlated with dental functional status and severity of dental disease. For persons with disabilities, the effect of dental disease on general health and function appears greater than for similar groups without a disability. (26)

Proper care is required to manage side-effects of medication e.g. dry mouth, gingival overgrowth, tardive dyskinesia (oral muscle spasms) and problems with speech, swallowing and taste, to manage effects of the illness and provide support for increasing individual's responsiveness to therapy.

Proper dental care stay the person pain free and minimizes behavioral problems due to dental pain, assist in proper nutrition intake. Proper oral health also makes to feel happy with appearance, maintain social interaction and self-esteem. Poor oral appearance, bad breath and dental incapacity can reinforce feelings of inadequacy, social isolation and rejection.

In summation, prevention of dental decay and gum disease brings about many positive results, each of which leads to still another gain in healthier, happier, more confident residents.

Barriers to oral health and accessing care:

Dental problems were identified as among the most prevalent unmet need by case managers of regional centers providing community services for persons with developmental disabilities. (27)

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

Fear and anxiety: Several studies indicate a high level of fear and anxiety in persons with disabilities. Extreme fear was inversely related to frequency of dental visits and perceived oral health status. (28)

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. (29) Caregivers play a

pivotal role in dental disease prevention, yet many are not motivated to provide such care.

Financial Barriers: Persons with disabilities, particularly those with severe disabilities, are unable to pay the cost of care, deprived with respect to income, has high rate of unemployment and no dental insurance, factors which are major determinants in the rate of utilizing dental services.

Poor skills: Since most of the mentally disabled children are not able to use toothbrush in a proper manner and unable to perform oral hygiene procedures adequately which leads to poor oral hygiene and periodontal problems. (30)

Unwillingness by Dentist: Private Practitioners do not feel to treat the patient with mental retardation or with some other disabilities as it requires more time and efforts. They tend to avoid these patients or react with frustration and apathy. Patients with such complex needs require the services of special programs, clinics, and facilities staffed by personnel with advanced training and experience. (26)

Ability to accept treatment: This depends on number of factors like mood, motivation, self-esteem, 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. (31)

Team effort: Special patient care not only requires the efforts by the dentist, dental hygienist, and dental assistant, but also other health care providers, family members, and social service agencies to facilitate therapy and home care. (32)

Preventive dental treatment considerations:

Oral health is an 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. (26)

1. Pre-treatment assessment:

Professionals should take proper medical history, and should have proper consultation with their physician 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.

Consent to care must be obtained from the patient or the legal guardian. Scheduling the appointment should be at a time convenient to the patient and caregiver; the preferred timing and length of the appointment depends on the individual's particular disability. (26)

2. Patient management:

The appropriate method of behavior management must be determined; modalities may range from ensuring a calm, friendly atmosphere, to behavior modification, to use of pharmacological sedation and physical restraints, and combinations of strategies. (33) To do proper management, one should keep following in mind:

a) Establish a relaxed environment: To relax the patient, dental staff must greet and welcome the patient, escorting him/her into the treatment room. Avoid keeping the instruments with dangerous outlook, openly which might

scare the patient. The operatory should have soft illumination and soft music plays quietly in the background.

b) Communication skill: Communicating in a soft voice and using a gentle touch will go a long way toward helping the patient relax. Communicating with a person who has special needs also often requires patience. The mental age of these patients may range from 6 months to 6 or 7 years in bodies that are 20 to 80 years of age, and it may be easy to forget that they do not communicate like other adults. (34)

c) Tell show do: Before doing any step of the procedure, tell the patient and show the instruments going to be use in the procedure. Start with least fear promoting object or procedure and move towards the higher grades.

d) Use of suitable aids: An adjustable mouth prop will allow the patient to open the mouth for long period of time. It will also prevent the trauma to dentist finger.

These patients may require more stabilization of the head. Oral hygiene procedure is best achieved for mentally handicapped child with the child lying supine on the floor, couch or bed and the head supported on the mother's lap. (13) Good finger rests and retraction of the cheeks and lips also are necessary to provide proper care.

Rinsing and suctioning by the dental assistant are essential. The clients may have enlarged tongue and/or swallowing difficulties, which may cause them to react unexpectedly when fluids are in the mouth. (34) Maladaptive dental behaviors require some sort of dental restraint.

3. Oral health Preventive Protocol:

The oral health status of these groups with disability should be improved by heightened awareness of the fundamental need for effective prevention from the earliest age through pediatricians, health visitors, and community and primary care teams.

a) Oral health education:

1. All programmes of oral health promotion for children with disabilities should have Specific, Measurable, Appropriate, Realistic and Time-related (SMART) objectives. The objectives should include policy development, improved availability of healthy choices, improvements in oral hygiene skill and provision of services. (35)

2. Diet: The role of sugar in promoting the dental caries process has been derived from numerous epidemiological, laboratory, and clinical studies. A balanced diet is essential for nutrition as well as a part of the preventive program for the handicapped children. The outcomes of several clinical studies show that chewing xylitol-containing gums reduces caries and mutans streptococci levels. (36)

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

b) Plaque Control: It can be done by mechanical means or via chemoprophylaxis.

Mechanical means: Toothbrush is a effective mechanical means to remove plaque. However most of the mentally disabled are not able to handle it properly and often need a

help of their caregivers. Some studies have shown that persons with disabilities show significant reductions in plaque and gingival index through mechanical control of plaque. (37)

It has been suggested that complete plaque removal with a conventional toothbrush is not realistic for this group (38). According to some investigators, powered brushes are particularly well suited for people with reduced motor skills (39). Among them is the triple-headed brush, which is designed to clean the oral, buccal, and occlusal surfaces of the teeth with a single stroke and is recommended for certain individuals with limited manual skills (40). Flossing may be very hard for these patients and instruction in the use of a floss holder may be helpful.

Chemical means: Use of chlorhexidine, the treatment of choice for gingivitis, is indicated in developmentally disabled, medically compromised, and dependent populations who are unable to remove plaque by mechanical means. (41) Various studies have demonstrated that chlorhexidine is well tolerated by persons with a disability.

For persons unable to use chlorhexidine as a mouthwash, the agent can be effectively swabbed on the teeth with an applicator, sprayed on the teeth, applied with a toothbrush, or used as a gel. Acceptance and compliance by clients and caregivers are the key to successful administration. (42)

c) Pit and fissure sealant: In this high-risk population, pit and fissure sealants should be applied to permanent teeth soon after eruption, as these measures are highly effective in preventing occlusal caries and parents should be advised of the need for regular monitoring and maintenance of fissure sealants. (43) As children requiring special care are a priority group for the use of sealants; their use should be recommended on newly erupted permanent teeth.

d) Fluoride: The benefits of fluoride for the prevention and control of dental caries is well documented. Optimizing fluoride in drinking water remains the cornerstone for prevention (44), but in its absence, dietary fluoride supplements, fluoride toothpaste and topical applications are recommended. (45) Use of fluoride toothpaste would help to reduce caries risk, and the routine use of these regular behaviors might keep children aware of oral health care.

For professional use, fluoride varnishes are the safest and most practical method for the patient (46), hence their use should be recommended for these special schools. Fluoride varnish is an almost ideal preventive dental agent for children with poor tolerance to dental procedures.

e) Orthodontic treatment: Orthodontic treatment for children with disabilities has long been neglected, and this treatment need should be taken into account in future planning of oral health care. (47) Preventive measures with regard to trauma to the face, jaw and teeth need to be included in the school curricula and disseminated to children during lessons involving health activities. (48)

f) Periodic scaling and prophylaxis: It should be performed under the preventive approaches. The proportion of subjects with bleeding, calculus and pockets of 3-4 mm should be provided with proper oral prophylaxis and

periodontal therapies. It has been demonstrated that training care staff in basic oral health care procedures can help in improving oral health. (49)

Restoration of the dentition to its normal form should consider the emergency treatments like relief of pain, pulpal abscess drainage, and extraction of the grossly destructed teeth.

g) School oral health services:

1. Educational institutions should include oral health as part of training or socialization programmes.
2. Improving school community relations by forming a dental health council that include teachers, parents, community leaders, dental professionals etc.
3. In-service training in promotion of good oral health for children with disabilities and in how to access oral care ought to be provided for teachers, institutional staff and parents.(50)
4. Positive links between educational establishments and dental services are essential for promoting the oral health of children with disabilities. To enhance oral health outcomes, advanced training is recommended for dental providers and the staffs of schools.
5. Conducting dental inspections, which can serve as a basis for dental health education.
6. Establishing specific programmes, such as toothbrushing education campaigns, classroom-based fluoride rinsing programs, diet counseling etc.(51)
7. A majority of the disabled children in this study were in need of specific dental care. These substantial unmet dental needs should prompt efforts by the dental profession to facilitate health care for individuals with disabilities in their institutional premises only.
8. Follow up of dental inspections.

Regular school-based programmes of tooth brushing should be implemented and reinforced in all these groups with disabilities. Children should be instructed to clean their teeth twice a day and oral hygiene should be practiced at school and supervised by teachers.

Recommendation:

- Initial prophylaxis
- Monthly application of topical fluoride
- Periodic scaling and prophylaxis
- Continuous motivation of children who can cope with special toothbrushes.
- Motivation and health education to guardians and caregivers(52)
- Dietary counselling to supervising staff.
- Motivation to subjects and guardians for frequent maintenance visits.
- Providing continual school oral health services.
- Developing and implementing educational programmes for dental students, residents and

practicing dentists and empowering teachers and parents to become more effective managers of these subject's oral needs.

Conclusion:

Proper preventive protocols and its implementation should be given higher priority for persons unable to remove dental plaque through brushing and flossing. Oral health promotion should include facilitating access and regular use of oral health services. To be effective, a preventive program must be simple to use, low in cost, and have the full cooperation of administrators, medical and nursing staff, personal care attendants, and clients.

Although it is quite difficult to improve the oral hygiene status of mentally disabled but can be achieved if the parents or caregivers are given suitable health education and by means of properly planned and effective preventive programmes.

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