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Research Paper

Impact of Oral Health Education on Children – A Review

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I. INTRODUCTION

Health education is any combination of learning experiences designed to facilitate voluntary actions leading to health.[1] It is considered an opportunity for experts to use a wide range of experiences and resources promote attitudes and practices that will be beneficial to individuals' wellbeing, family and community.[2] It provides people in the community with knowledge about good health. It teaches them how to prevent and promote health, how to protect and help themselves and the living and working environment. Health education has roots in the ancient cultures. It has been confirmed that the traditional way of learning and teaching alone is not enough.[3] Each person has the social responsibility for their own health and the health of those around them and should take active lifelong participation in the process of health education and even more important should practice a healthy life style.[2,3]

Oral health is a reflection of general health. It was reported in the 2000 National Oral Health Conference (USA) that "you cannot be healthy unless you have good oral health". Moreover, oral health can significantly influence the quality of life. Personal oral hygiene measures are the main part of the oral disease prevention.[4]

In addition to healthy nutritional habits, to preserve proper oral hygiene and prevent caries and periodontal diseases the use of fluoride tooth paste, and regular tooth brushing (twice a day) are required. On the other hand, the importance of oral hygiene education on oral health cannot be overlooked.[4] Education focusing on dental practice is essential for the success of an oral health community strategy.[5]

Oral health education, an important part of oral health promotion, has been considered an essential and basic part of dental health services. It aims to promote oral health principally by providing information to improve awareness leading to adoption of a healthier lifestyle, positive attitudes, and good oral health behaviour.[6] It is the first step in the prevention of oral diseases in order to decrease socio-demographic differences and to give equal opportunities of oral health, thus promoting measures necessary for the improvement of the population's quality of life.[7]

School is one of the biggest channels in delivering health education to children. They provide adequate and appropriate training to children at the prime time of their lives. The changes brought by the consequence of their experiences can help them benefit for a lifetime.[8]

Adolescence is an important life stage for establishing adulthood behaviours; during adolescence, young people assume responsibility for learning and maintaining health-related attitudes and behaviour.[6] It has been shown that brushing habits developed during childhood and adolescence will last for the rest of life of the subject.[4] Thus, Oral health education is a powerful and successful tool in promoting oral health in children and adolescents.[6] So, this narrative review is aimed to assess the impact of oral health education on children's oral health.

II. SCHOOL ORAL HEALTH EDUCATION

A school is a closed environment that concentrates a considerable number of individuals of the same age group who regularly attend the institution.[9] School is an important platform for learning. It not only contributes to an individual's education but also to their health and health related behaviour[10]**.** It has been considered ideal for developing health and oral hygiene programs with children in age groups that are favourable for adopting preventive measures. Moreover, oral health behaviour is a result of a lifelong learning process and this can be achieved by an interdisciplinary collaboration among dentists and professionals in other areas, such as psychologists and teachers.[9,11]

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The WHO has provided "information series on school health" to advocate "health- promoting schools" and also implemented strategies for oral health promotion in schools. Oral health and dental camps have become an integral part of school curriculum. Indian school textbooks had basic and adequate information on oral health.[10,12]

Oral health education is a major public health issue that must be taught to children and adolescents within the family and school environment. Oral health promotion is very important in order to insure the application of primary prevention methods such as daily tooth brushing at least twice a day, daily use of dental floss and regular visits to dentists to prevent and detect oral diseases at an early stage. Oral health education is the first step in the prevention of oral diseases in order to decrease socio-demographic differences and to give equal opportunities of oral health, thus promoting measures necessary for the improvement of the population's quality of life.

Oral health education should also cover food hygiene comprising the control of the consumption of cariogenic foods with a high content of carbohydrates, which is fundamental to avoid dental caries development.

School policies should have into account the necessary change with a view to preventing the consumption of sweets and to motivating the consumption of healthy foods and drinks. It is strictly necessary to promote the decrease of sweet foods and beverages in and around the schools.[7]

An important issue that should be acknowledged in oral health education is the unnecessary fear of dental appointments.

The best way to teach the main aspects of oral health to children and adolescents is going to their school environment to explain the importance of:

- Ensuring proper oral hygiene habits
- Fluoride application at home and during dental appointments
- Fissure sealant application and regular reassessment
- Regular check-up dental appointments at least twice a year
- Decreasing sugar intake and maintaining a well-balanced nutritional intake to prevent dental caries
- Consuming fruit and vegetables that can protect against oral cancer
- Stopping tobacco use and decreasing alcohol consumption to reduce the risk of oral cancers
- Using protective sports and motor vehicle equipment to reduce the risk of facial injuries.[7]

III. COMMUNICATION

A two way process of exchanging or shaping ideas, feelings and information to bring about desired changes in human behavior. Communication which is the basis of human interaction is a complex process and is a key to the success of health education programmes.

Types of Communication

There are 3 types of communication

1) One way communication and two way communication

One way communication (Didactic)

- Flow of information is one way, from the sender to the receiver.
  Drawbacks - Knowledge is imposed; learning is authoritative; there is little audience participation; no feedback

Two way communication (Socratic/ Dilectic)

- Participation from both the sender and the receiver.

- Learning is active and democratic
- It is more likely to influence behavior

2) Verbal and Non - Verbal communication
- Verbal communication - Traditional way by word of mouth
- Non - Verbal Communication - involves bodily movements and facial expressions

3) Formal and Informal communication
- Formal communication - follows lines of authority
- Informal communication - conversing with friends or colleagues

Barriers of Communication

Psychological barriers include emotional disturbances, depression, neurosis and any other psychosomatic disorder. Utmost care should be adopted in order to convey the message

Physiological barriers include difficulties in self-expression, hearing or seeing and understanding. When dealing with special groups, the channels of communication should be selected in such a way as to target that group effectively.

Environmental barriers include noise, invisibility, congestion. These can be overcome by making small groups and using appropriate channels of communication.

Cultural barriers include patterns of behavior**,** habits**,** beliefs**, c**ustoms**, a**ttitudes**, r**eligion. Care should be taken to send the message across effectively without hurting the sentiments of the people

Importance of communication in dentistry

1) It is a fundamental component for achieving health literacy for patients
2) The initial meeting between the dentist and patient forms a framework for interpersonal relationship
3) A good interpersonal framework helps the patient to communicate their problems effectively and helps the dentist to understand them correctly
4) Engaging the patient by educating them about their problem and enlisting different modalities of treatment helps the patient in decision making. Involving patient in decision making gives them a sense of comfort regarding the treatment plan
5) Dental practice requires use of knowledge, clinical efficiency, experience along with soft skills (skills to communicate, lead and think creatively) to achieve success and dynamic growth in practice.[13,14,15]

IV. AIDS USED IN HEALTH EDUCATION

The aids used for transmitting health education are the main constituent of the armamentarium of health education process.

1. Auditory Aids
- Based on the principles of sound, electricity and magnetism
- Useful in reproducing any kind of words spoken and also helps in repeating the same
- Most commonly used audio aids in health education are megaphones, microphones, gramophone records & discs, tape records, radios and sound amplifiers

2. Visual Aids
- Based on the principles of projection
- Helps individuals to understand better
- It is of 2 types: Projected aids and Non-Projected aids

Projected aids
- Needs projection from a source on to the screen
- Eg: Films or cinemas, film stripes, slides, overhead projectors, transparencies, bioscopes, video cassettes and silent films

Advantages
1) Real life situations can be enacted in films
2) Self-explanatory
3) Creates a special interest among the audience to watch a film
4) Situational effects can be shown in a film

Non projected aids
- Do not require any projection

Eg: Black board, pictures, cartoons, photographs, flip charts, flashcards, flannel boards, printed materials-leaflets, pamphlets, folders, booklets, brochures, models, specimens

Combination of Audio-Visual Aids
- Sound and sight can be combined together

Eg: Televisions, tape and slide combinations, video cassette players and records, motion pictures or cinemas, multimedia computers

- These also include traditional media - folk dance, folk songs, puppet shows, dramas.[13,14]

V. METHODS IN HEALTH EDUCATION

1) Individual approach

This is probably one of the best methods of health education. It is the most reliable method, and has the most lasting effect. It may be given in personal interviews, personal letters and in homes of the people. Opportunity should be used to educate the patient on matters of interest such as cause and nature of illness, its prevention, beneficial diet, oral hygiene etc.

Advantages

a) Can be done in a dentist's consultation room (two- way communication)
b) Discussion, argument and persuasion of an individual to change his behavior is possible
c) Opportunity for the individual to ask questions and clearing doubts

Disadvantages

a) Small number can benefit
b) Health education is given to only to those who come in contact with the dental surgeon or with public health personnel

2) Group Approach

a. Chalk And Talk (Lectures)

- "A carefully prepared oral presentation of facts, organized thoughts and ideas by a qualified person". Should be based on topics of current interest
- Group should not be more than 30 people and the talk should not exceed 15 – 30 minutes
- It can be made more effective by combining with A-V aids such as flip charts, flannel graph, exhibits, films and charts.
- Disadvantage - one way communication, learning is passive.

b. Demonstrations

- Carefully prepared presentation to show how to perform a skill or procedure.
- It has high educational value in programmes like environmental sanitation, mother and child health and control of diseases.
- It has high motivational value.

c. Group Discussions

- Process of identifying problems and finding solutions collectively by members of group
- Consist of 6-12 members and participants are seated in a circle
- Group leader initiates the subject, prevents side conversations, encourages everyone to participate and sums up the discussion
- There should be a recorder who prepares a report on issues discussed and agreements reached

Disadvantages – there may be unequal participation
- some members may be shy and some may be dominating

d. Panel Discussions

- Panel of 4 to 8 experts sit and discuss a topic in front of an audience
- Headed by a chairman who opens the session, introduces the speakers and keeps the discussion going
- Audience are allowed to ask questions

e. Symposium

- A series of speeches on a selected topic. Each speaker presents a brief aspects of the topic and no discussion among speakers
- In the end, the audience may ask questions

f. Workshop

- It consists of series of meetings with emphasis on individual work with the help of resource persons.
- Total workshop is divided into small groups and each group will select a chairman and a recorder.
- The individuals work, solve a part of the problem, contribute to group discussions and leave the workshop with a plan of action for the problem.

g. Conferences or Seminars

- Program range from half day to one week; held on a regional, state or national level
- Usually have a theme

h. Role Playing/ Socio Drama

- Useful for children's health education
- The audience should take part and group size should be 25.

- Situation is dramatized to make communication more effective
- Puppet shows is a type of socio drama

3) Mass Approach

Communication is given to a community where the people gathered together do not belong to one particular group

Advantages

a. Large number of people can be reached
b. People of all socio-economic status have access to health education

Disadvantage: One way communication

Various Mass Media used are

a. Television

- Most popular of all media
- Effective - creating awareness and influencing public opinion and introducing new ways of life.

Advantages - Coverage -large number and large areas or communities.
- Many topics- projected and conveyed to the general public from time to time.
- Health education can be provided along with entertainment.

Disadvantages - It cannot cover all areas of learning.
- One way communication

b. Radio

- Has broader audience than television
- Can also reach illiterate people
- Economical and easily accessible medium
- Care should be taken to select the proper language and length of talk
- Local health issues -identified and discussed leading to increased general awareness.

Advantages - cheaper media for mass communications
- accessible to people of all socioeconomic status.

c. Newspapers/ Press

- Play an important role.
- Most widely disseminated of all forms of literature.

Advantages: - easily accessible by the community
- available in different languages

Disadvantage – Low readership in rural areas because of illiteracy

d. Printed material

- Magazines, pamphlets, booklets and hand–outs – for health communication
- Aimed to those who can read and conveys detailed information
- Produced in bulk for very little cost
- It can be shared by others in the family and community.

e. Direct mailing

- New innovation in health communication in India
- Intention is to reach the remote areas of the country with printed word like booklets, newsletters etc.
- These are sent directly to village leaders, literate persons, panchayats and local bodies.
- This is a successful mass media in creating public awareness.

f. Posters

- Intended to catch the eye and create awareness
- Must be simple and artistic
- Should be placed in locations like bus stands and hospitals
- They should be changed frequently to maintain their effect

g. Health museums and Exhibitions

- Health Museums - Attract large numbers of people
- Photographic panels attract more persons than graphic panels because photos give a humanized touch to the communication.
- Health Exhibitions – Personal communication is possible

h. Folk Media

- Mass communication through Folk media such as keerthan, katha, folk songs, dances, dramas and puppet shows.

i. Internet

- Computer based communication system has opened vast capability of knowledge transfer and possible to get into direct and instant communication across the world.
- Fast growing communication media and holds a very large potential to become a major health education tool.

Disadvantages - expensive and accessible to only few people
- Chances of providing misleading information[13,14]

VI. DISCUSSION

Oral health is an essential component of health throughout life as it enables an individual to eat, speak and socialize without active disease, discomfort or embarrassment and contributes to the general well-being.[16,17]

Health education is an important tool of public health and an effective primary preventive method.[16] It aims to promote oral health through educational means, principally the provision of information to improve oral health knowledge for adoption of a healthier lifestyle, changed attitudes and desirable behaviours.[18]

Childhood is the critical time period when skills and attitudes are taking shape. Moreover, children are not only fast learners and anxious to acquire new skills, they are also at risk for the development of dental health problems. Hence, school children are considered to be an important target group for various health education activities with the underlying objective of indicating healthy lifestyle practices to last for lifetime.[17,19]

Schools have been suggested as the best platform to impart this oral health education as they are estimated to reach over one billion children worldwide.[20]

Adolescents are in particular need of preventive programs as they have high levels of plaque and their oral hygiene practices are based on short-term rewards like to improve appearance and social attractiveness.[21]

Oral diseases can lead to loss of more than 50 million school hours annually.[22] Poor oral health can have adverse effect on children's performance in school, and later, it may affect their self-esteem and accomplishments in life. In addition, children with poorer oral health were more likely to suffer dental pain, miss school, and show underperformance in school.[23]

Few studies had stressed the need for oral health education programmes in schools to improve their oral health-related KAP scores.[24-28].

Different modes like board games, drama, robots have been used across the globe to promote the oral health education in children.[8,29] Drama mode of health education can evoke powerful feelings and promote personal growth.[30] John et al.[31] reported that the drama mode had a better impact on the oral health of preschool children.

Game-based health education approach is a powerful method of teaching students to adopt thought provoking means of studying. It motivates pupil to understand and learn the facts about health rather than only memorizing, thereby improving cognitive development and building confidence.[32] It is an easy, child-friendly, entertaining and cost-effective method for teaching oral health instructions and preventing oral diseases in children and had a better impact on the knowledge scores of children.[8,32,33] According to Castillo et al.[34] using games that include health and hygiene messages can be an alternative for teaching basic health concepts.

According to Naseem Shah et al.[35], videotape can be a useful adjunct in teaching about oral health in Indian population. Computer method was the most effective method in improving the oral health knowledge among children.[19,36] Ahire M et al.[37] reported that ROBOTUTOR would save clinician's chair side time and help in effective demonstration of the brushing technique.

According to Srivastava R et al.[20], Oral health education given by both teacher and dentist using the same method was equally effective in increasing the knowledge of children regarding oral health and reported a statistically significant difference in the outcomes of the dentist-led group and the teacher-led group. This was contradictory to the study done by John et al.[31] which showed no significant difference.

Haleem A et al.[38] reported that dentist-led, teacher-led and peer-led strategies of oral health education are equally effective in improving the oral health knowledge and oral hygiene status of adolescents.

According to Angelopoulou MV, experiential learning program was found more successful and effective than traditional learning in improving oral hygiene, gingival health and in reducing caries incidence.[39,40]

17.5% and 27.8% reduction in plaque and gingival scores was observed/ reported in the study done by Ganesh AS et al.[17], whereas 29% and 51% reduction in plaque and gingival scores was observed in the study done by Biesbrock et al.[41] This was because in Biesbrock study, learning was accomplished through small groups and partner learning. Staff members supervised the program with each session ideally suited for 4-15 members.

Significant reduction in mean plaque and gingival scores after oral health education was observed in studies Ganesh AS et al.[17], Shenoy RP et al.,[21] D' Cruz AM.,[18] Bharadwaj VK et al.[16]. But no significant reduction in the gingival scores was found in the studies Ajithkrishnan CG et al.[42] Worthington HV et al.[43], N. Esfahanizadeh[4] Reinforcement through repeated DHE sessions resulted in significant improvements in oral health knowledge and practices, and reductions in plaque and gingival scores[16,21].

Reduction in the mean caries status was insignificant in the studies done by Ajithkrishnan CG et al.,[42] Frencken JE et al.,[44] Vanobbergen et al.,[45] Jaime RA et al.[46]

Many studies reported that oral health knowledge improved after oral health education.[8,16-21,23,33,40,47,48]

According to Goel P et al.[49], single-lecture technique seems to be inadequate in improving the knowledge of children in the long term.

Schools with more frequent exposures to oral health education program showed more positive results compared to schools with fewer exposures. This was contradictory to studies with short duration of OHE program and no reinforcement showed good immediate results but failed to show long term positive results.[21]

Chandrashekar BR et al.[50] reported that the frequent DHE by trained teachers was found to be more effective than infrequent DHE by qualified dentists.

According to Shenoy RP et al.,[21] DHE program conducted at three-week intervals was more effective than that conducted at six-week intervals in improving oral health knowledge, practices, oral hygiene status, and gingival health of schoolchildren.

Ajithkrishnan CG et al.[42] reported that an oral health education program for a longer period of time may show some favourable results.

V. CONCLUSION

Oral health education is effective in improving the knowledge, attitude, and practices of oral health and in reducing the plaque and in improving the gingival health. School-age is the formative period physically as well as mentally, transforming the schoolchild into a promising adult. Hence, oral health education should be delivered targeting both school and home settings for achieving long-term benefits. Non-dental personnel involved in primary health care such as Dais, ASHA, and Anganwadi workers may help to deliver oral health knowledge to a defined target population. Reinforcement of oral health information is of utmost importance and is the key to the success of any oral health education programme.

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