

PERSPECTIVE

Choking – A Public Health Problem- Are We Prepared?

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Choking or acute airway obstruction is the emergency condition which is usually first dealt by general public and only then by health professionals. It has been documented in literature that educating the public about choking hazards and its management can positively affect the incidence of choking events and mortality. (1) In the developed countries, Basic Life Support (BLS) courses and First Aid courses are routinely done by public and are aggressively pursued by government and health care givers but in India there is no such uniform program. Indian Society of Anesthesiologists (ISA) has developed indigenous CPR guidelines and they are also organizing affordable nationwide CPR training modules, at present their program does not deal with the choking, but hopefully as their program will gain more acceptance, they will also incorporate choking modules. (2)

Etiology of choking varies according to the age group and different preventive and management strategies are required for different age groups to tackle this problem. Although data from India is not much, but some common strategies followed by other nations can also be applied to the Indian Population, thus preventing these fatal choking episodes.

We hereby discuss this problem according to different age groups and we have made an attempt to recommend some of the preventive strategies in context of Indian scenario.

Choking in Children

Now and then we come across news of child death from aspiration of foreign objects. The unfortunate part of all these events are most of them are preventable. It is needless to say that "Prevention is better than cure". It is common misconception that educated parents can prevent these unfortunate events. The study by Nicholas et al has concluded that highest degree of parental education does not provide protective benefit and all parents regardless of their socio-economic status require instructional knowledge in preventing choking hazards. (3)

The pediatric patients admitted with airway foreign body has mechanical ventilation rate of 21.2% and in hospital mortality rate of 2.5%. (4) Chapin et al group studied 1,11,914 children from 2001-2009 and they estimated prevalence of non-fatal choking around 12,435 episodes per year. In this study majority of choking episodes had happened in 1 year or less than 1 years of age, with mean age being around 4.5 years. (5) Rimell et al studied the 449 choking related deaths in children and they found that 65% of

children were less than 3 years of age and balloons were most common cause of such death. (6) Food materials are responsible for 1 choking related death every 5 days in the United states. (7) Lumsden et al pointed out a case where child had choked to grape and they have pleaded for its awareness. (8)

Rimell et al, in their study analyzed the objects which have caused the choking, and they have found that out of 101 objects, 14 objects have actually passed all the criteria required by government regulations for safe toy at that time. (6) India is a big economy and children toys are themselves a big market segment, although toys production in India is regulated, but such a big market finds unregulated toys also. The challenge is both for the parents and government to keep the child safe either by strict regulations or mass media educational programs.

Choking is not a straightforward problem and our next example highlights the complexity behind this common problem. In 2007 the WHO program of deworming caused 4 choking related deaths in Ethiopia. Following this WHO recommended that tablet should be given as crushed form. (9) The article published by Kernal et al evaluated this strategy and analyzed the choking episode and they found that tablet crushed or not did not make any difference. The single risk factor which was associated with choking was Non-Content Demeanor of the child with an odds ratio of 20.6. (10)

The problem of choking in children is multidimensional and it requires coming together of healthcare professionals, government agencies, NGOs, parents and care givers to develop the effective prevention strategies.

In crux, we concluded two things, first, do not feed the child if he or she does not want to take and second, child can choke to almost anything and it requires vigilant, educated parents to manage this adverse reaction. American academy of pediatricians has also advocated that it is almost impossible to prevent all choking episodes in the children, so parents, school teachers, child care providers should be taught about choking first aid. The academy has also laid down the policy statement regarding the prevention of choking among children. (7)

Children are inquisitive in nature and as they learn to grasp things, they start exploring the universe by putting everything in their mouth. The problem of choking in pediatric age is quite common and educating the parents and care givers can reduce the incidence of this fatal event. Israel in 1983 started

mass media program to educate the people about the hazards of choking and within 2 years their incidence of choking dropped by 35%. (1)

Healthcare needs to push governments to make the first Aid Course mandatory for all schools. Dissemination of knowledge should be made wherever the child comes in contact with the society being either at vaccine clinics, pediatric clinics or ice cream parlors, anganwadi centers and schools. Pediatricians can guide the parents about the problem and can teach them what to do in emergency scenarios.

The maneuvers are quite simple and can be given by anyone. The history are usually clear cut and people should be taught about identifying and acting upon them as fast as possible.

Considering inquisitive nature of child, lack of awareness in society itself becomes a significant risk factor in choking. Working sincerely towards awareness about choking seems to be need of the hour.

Choking in Adults and Elderly

Elderly people like children are also at risk of choking, their prevalence is low, but death rate for food related choking is seven times higher among people >65 years than among the children aged 1-4 years. (11) Dolkas et al studied the profile of 133 adults aged above 18 years who died because of choking. In their study 14 % people were using alcohol or other sedative at the time of choking. In their victim population, 19 deaths out of 133 happened in restaurant and out of 19 only one patient received any resuscitative effort. (12) In a study done by Inamasu et al, no patient received Helmick maneuver and only 26% victim's bystander performed CPR. (12) The data highlights the need of training people in first aid so that these fatal accidents can be prevented.

There are certain modifiable and non-modifiable risk factor associated with choking in adults and elderly. Avoiding alcohol or sedative drugs with food is an avoidable risk factor. Mental illness is the one of the common risk factor in adult population. (13) In elderly, Parkinson, dementia are the common neurological conditions which are associated with risk of choking. (11) These group of patients can seldom take care of themselves and are usually dependent on care givers. Training of the care givers in identifying the high-risk factors and training them

in prevention and early intervention can improve outcomes of these patients.

The most common location of choking episodes other than elderly care centers are at home. (12) In India, most population cannot afford the well trained elderly care givers at home. The family members who take the responsibilities of elderly need to identify as well as able to prevent this condition. (Table1) In study of Berzlanovich et al, they found that only 5% cases above 65 years and 13% cases below 64 years could be correctly diagnosed as choking related death. (14) They also concluded that lack of awareness is an important factor in fatal asphyxiation. (14)

Conclusion

Public should be educated about the problem of choking through mass media. Parents, child care givers, School personals must be trained so that a healthy child does not lose their life because of easily preventable causes. Education and awareness remain the most important weapon in preventing this fatal event.

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Tables

TABLE 1 RECOMMENDATIONS OF SOME OF THE PREVENTIVE STRATEGIES FOR CHOKING.

Children	Adults & Elderly
Educate the parents after delivery before discharge	Educational Program in school and colleges along with First Aid Courses.
Anganwadi workers should be involved in disseminating the knowledge	Special educational program for the people who are involved in the care of elderly
Pediatricians, Child hospitals, Dentists, Vaccine centers can distribute pamphlets about the hazards of choking	Mass media programs
Mass media program through TVs, Radio, Internet can be used to disseminate this knowledge.	Adoption of single nationwide Basic Life Support or First aid program and implementing it on large scale
Mandatory trainings of School teachers, Crutch personnel	Taking accredited courses should be mandatory for all degree and diploma courses.
Food regulation act as present in United States for safety of food materials for children can also be adopted in our country	First Aid or Choking management program can be made compulsory program for CBSE and state boards.
Strict toy regulation	Medical Institutes, Districts hospitals should take pioneer in implementing this program in their respective areas.
Creation of Central Database	Signage's in Bar and Restaurants