

Child matters are most serious

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THE anguish and anxiety of parents when something, anything happens to a child is known to every parent and each child. That taxonomy includes every member of the human kingdom. The subject of child safety to prevent injury and trauma cannot therefore be over emphasised. But, in reality, there is never more than a whimper on the matter.

In our frenzy to design, build, operate and deliver for the adult world, we most often, perhaps unintentionally but definitely carelessly so, are unable to address the views and needs of other important parts of our life and society; sadly, children and people with special needs are excellent examples.

A child is meant to be restless. A child is supposed to be the cause of one's stress. A child only keeps a parent busy by its pranks; call it impishness, as much as the parent did the child's grandparent.

The child is an expert in making sudden, unpredictable and horrifying moves that the world we designed is does not take kindly. Bungee jumping from the bed, banging the head under the dining table, falling nose first on a tiled floor, slipping in the bath after being soaped, sticking a finger in an electric socket, pulling down a hot cup of tea, burning by touching heating utensils, gulping down medicine prescribed for someone else... the list is in fact endless.

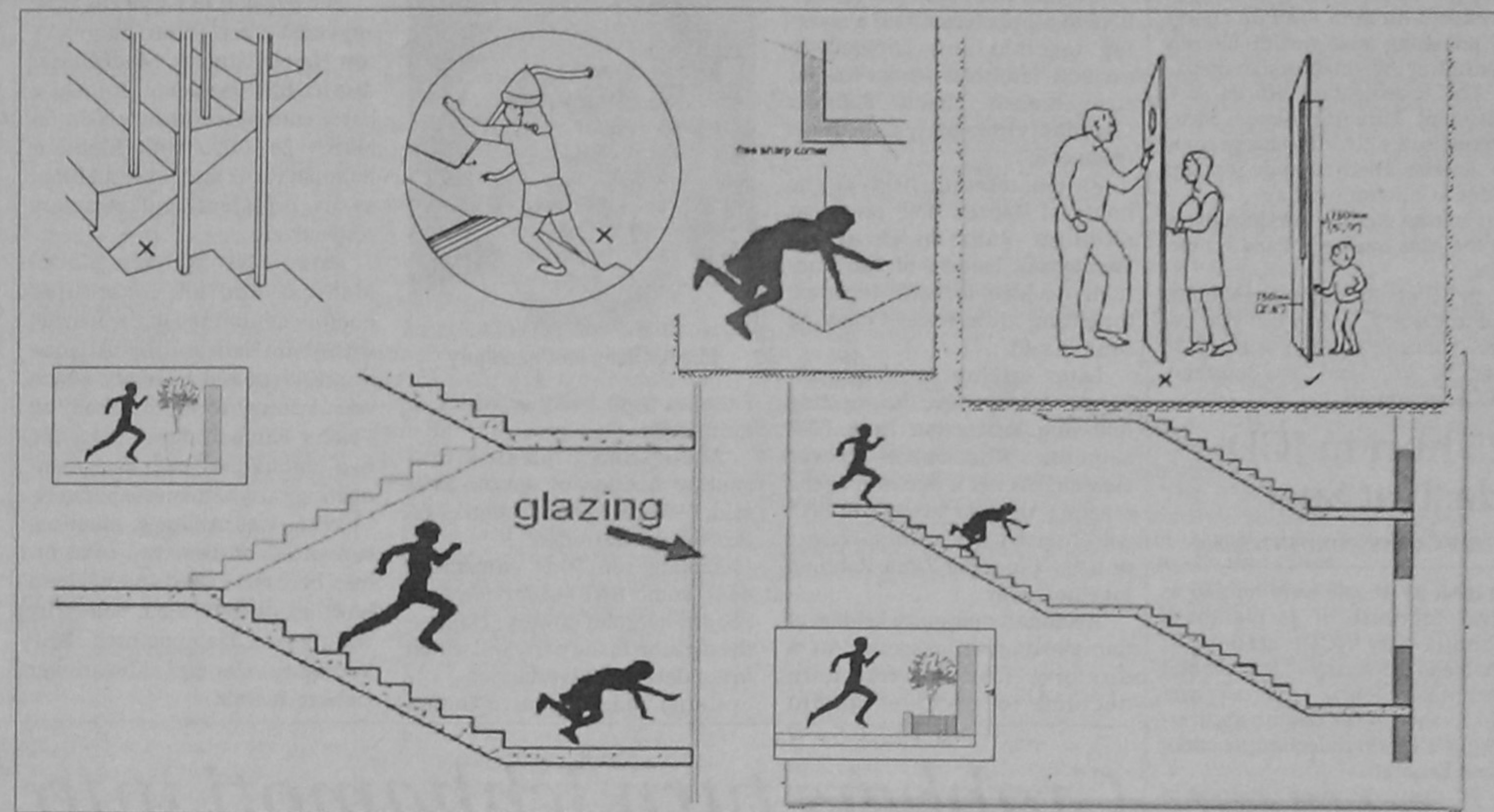
While it is known that generally movement of person or equipment can cause accidents, resulting often to injury and fatality, passive pre-

ventive and precautionary measures are within the command of the architect and the engineer; albeit the cooperation of the building owner and user is paramount in giving effect to safety arrangements.

Architecture Lecturer and researcher Muntazir Monsur in today's discussion highlights the important issue of child safety in an apartment building. The child is likewise unsafe in all other building types (e.g. school, shopping centre, restaurant, and cinema hall) that it is allowed to use. If this is an eye-opener, it calls for further research and awareness build-up.

An upbeat all-round campaign involving all parties concerned, including the child to establish ergonomic parameters, is necessary to ensure that the child can look back and thank posterity for its efforts in helping it grow up with all its limbs and senses intact. The matter is that much serious.

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Designing for child safety in living spaces

A long neglected issue in the apartments of Bangladesh

MUNTAZIR MONSUR

"CHILDREN are more vigorous and exuberant users of buildings than adults, they use parts of the building and its surroundings as play equipments." Ralph Sinnot

In the design of the apartments of our country, it seems that child safety is not one of the highest priority issues. Much consideration is given to space planning or aesthetics, as new apartment buildings with splendid elevations are being erected on the city fabric all the year round. But are these buildings child safe? The question remains as we go through some statistics to try to get a picture of the situation.

Unfortunately there is no accurate statistical data on the number of household accidents involving children in our country. Even the child accident or injury data are not properly documented to identify the ones which are being generated due to design errors of living spaces.

Alarmingly though the Bangladesh Health and Injury Survey (BHIS) show that three children die every hour from injuries in our country. Two children suffer serious but non-fatal injuries every minute. Thirteen thousand permanent disabilities occur every year due to injuries. In 2002, nearly one million Bangladesh children were injured. Injury accounts for an estimated 38 per cent of all deaths over the age of one. Estimated 36 children become disabled everyday following injuries. These statistics are strong enough to establish the fact that child injury is now occurring in large numbers in this country. Yet fingers cannot be point at the weakness of the designers of living spaces as one of the primary causes of this critical scenario. But the following table helps to perceive that child safety in design can no longer be ignored if the state of child safety has to be improved in Bangladesh.

Basic Data	Estimated events in 2003	% of injury mortality/morbidity	Rate/100,000 People
Children under 18	955,323	29 (all mortality)	592.0
Total Injury mortality (moderate to severe)			
Of injury mortality:			
Disability due to injury	12,124	1.4	22.0
Fall	281,529	30.0	476.0
Harm	172,842	18.0	287.0
Cut	122,508	13.0	211.0
Road Traffic Accident	111,417	12.0	187.0
Near drowning	68,761	7.1	114.0

"Fall"-type of accident is the cause of the largest number of injury occurrences causing moderate to severe injuries to children in Bangladesh. The rate is more than twice the number of injuries due to traffic accidents. Household accidents lie under this category.

All sorts of accidents which are very familiar to us, such as falling down the stair or from parapet-less rooftops or narrow cornices and thousands of other ways that are only possible to happen to a child within a living space are providing this alarming large figure.

Recent studies in the UK have shown that one third of the fatal accidents to children occur in home. In Bangladesh we may not have the accurate statistics, but it is evident that child safety issue in living spaces can no longer be ignored in the context of the present day scenario.

In a city like Dhaka an open space or open sky for a child living in an apartment is a rarity. But this poor condition cannot restrict a child from indulging in activities like running, jumping, climbing or any other such physical movements. Lack of playground will always force a child to seek play spaces within the apartment. The number of household accidents among children will therefore be always on the rise.

The city is unable to provide the needs of open playground for children. The dense urban fabric and the overall condition of traffic and security do not leave us with much option to change the situation, but we can always try to make our homes a safer place for the children. Playing in and around the apartment cannot be stopped; rather we should concentrate on delicate design considerations to eliminate the chances of household accidents among children.

While designing for child safety in an apartment two things must be remembered. First of all, this may be regarded as the "impossible task" of the architect to design a completely child-safe apartment. Secondly, child safety in an apartment does not involve installation of expensive devices.

At every age a child generates different possibilities of household injuries. Even at the age of only nine months a child can roll or squirm to any possible danger. At eighteen months of age, he or she will wish to walk up and down a stair with helping hands and will move to impossible spaces without any notice. Poking electric socket and other dangerous stuffs will become his hobby. From the age of four, he or she will master all the amazing stunts of jumping, running, climbing, sliding, swinging and others. As mentioned earlier, the perception of space of a child is very much different from that of a grown-up. The building and the various internal spaces are like play equipments for a child. A stair flight is not just a means of vertical circulation for him, rather it's a very interesting arrangement for him to practice jumping or hiding below the landing. To understand child safety it is very important to understand a child's perception of a home.

Cost of safety design for children is almost nothing compared to the high cost of installation of fire safety devices in an apartment. It's all about detailing and delicate considerations of the architect. There is no reason for the developers or apartment builders to worry about the cost of providing child safety. But such protective provisions can save valuable lives and prevent serious injuries. An attempt can be made to identify the most critical parts of an apartment regarding child safety and provide detail design considerations for them.

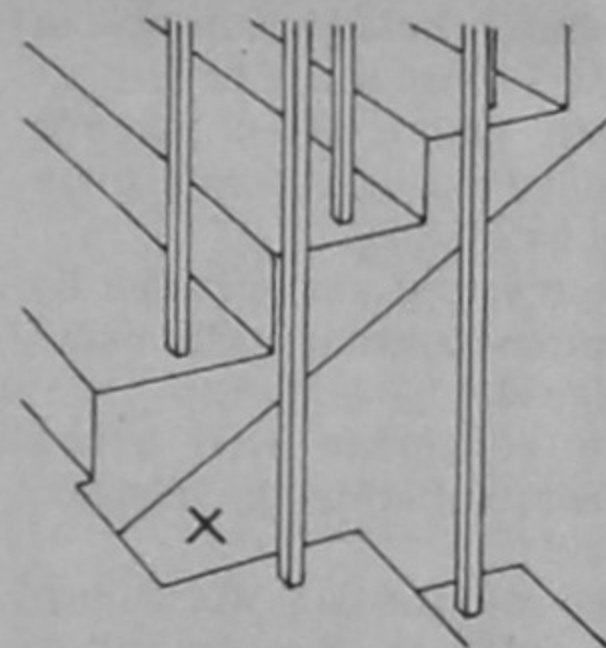
The following parts of an apartment building should be given highest priority at design stage to reduce child injury possibilities:

1. The stair case.
2. Handrails/balustrades.
3. Windows/glazing.
4. Doors and wall details.

5. Passage or hall way.
6. Rooftop and parapet.

The stair case

The stair is the most exciting space for children. They love running up and down the stair. Also jumping over a number of steps is a very popular stunt to them. It is very obvious that a number of accidents can be due to the staircase of an apartment building. Design recommendation for child safety of staircase requires very narrow gap, if at all, (not more than 100mm or four inches) between the flights of a double flight stair. Doglegged staircase is considered to be a poor choice because of the multiple change of direction. Children running up and down a doglegged stair may not be able to keep pace with the continuous direction change. Also a doglegged stair provides a well like central core which is considered to be very much dangerous.



Children may fall victim to even a small gap between the flights of a stair



The deadly gap between the flights of a stair

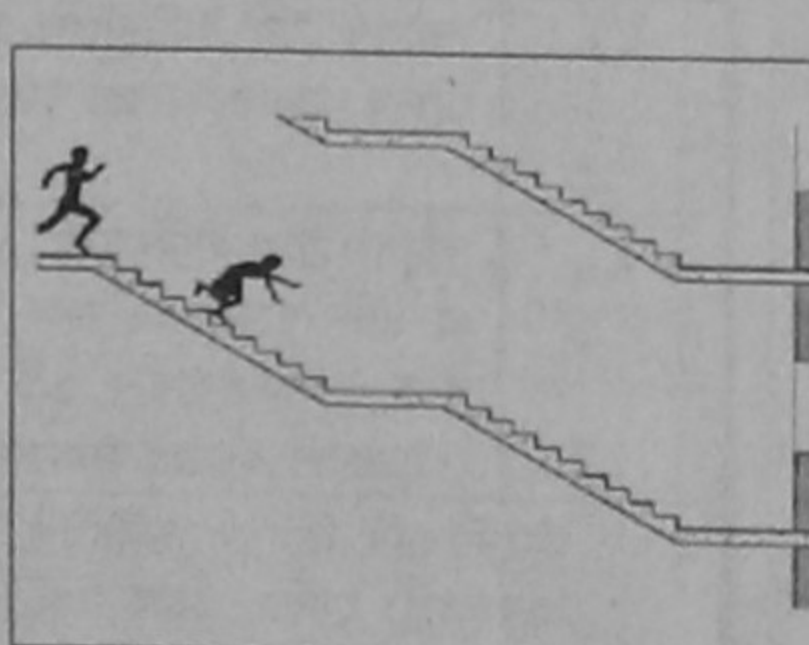


Dangerous central core of a dog legged staircase; net may be ineffective in case of someone falling

Poor design seem to be the more popular option

Somehow in our country in many of the apartments the poor choices of design for child safety seem to be more popular. The doglegged stair is usually provided. Excessive gap between the flights of a stair is dangerous. In one case in our survey it was found that a net was placed, maybe to stop a child from falling, perhaps as a late realization of the imminent danger.

A long single flight of stairs is also considered to be very dangerous, as it allows uninterrupted falling over a long distance and height. If a child, while playing, slips from the top of a single flight stairs, his injury may result in fatality, as shown in the diagram.



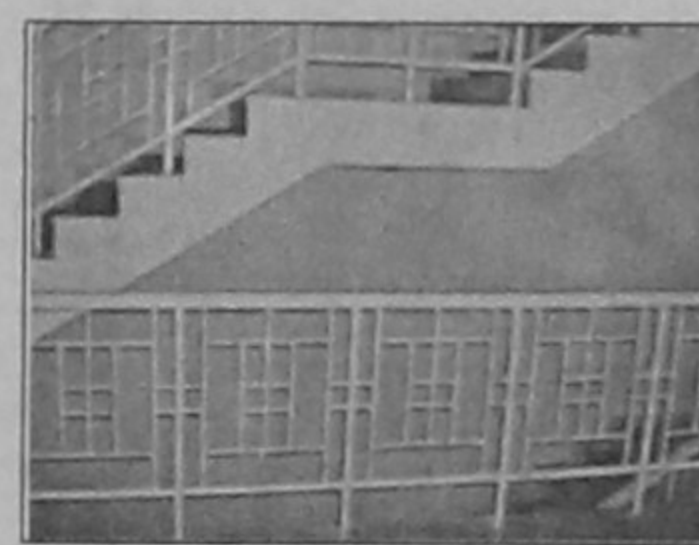
Dangerous choice of single flight of stairs without proper landing is practiced in some apartments.

The choice of a single flight stair becomes even more dangerous when the intermediate landing is not provided. This worst condition of stairs regarding child safety prevails in many apartments of our country.

Handrails/balustrades

Children love to climb. And over the age of four they express amazing talent and skill in climbing. Obviously their first choice for climbing is the handrails or balustrades within a building. Proper child-safe design recommends that handrails should not be provided with horizontal members as they give climbing opportunities to a child which may lead to a serious accident. But are we aware? In many of the modern apartments in this country handrails with horizontal members are installed. Whatever may be the material or they may look gorgeous, they are not

safe for children.



Horizontal members in handrails: provides climbing opportunity for children.

The spacing of the vertical bars of a handrail is also a very important consideration for child safety. There are standards for grill spacing and devices for checking the spacing. If the spacing between the bars is not proper there is a high risk that a part of a child's body may be trapped. As a thumb rule a maximum of four inches or 100mm of spacing may be provided between the vertical posts of a handrail.

Windows/glazing

In the use of glazing in our country architects often prefer style before safety. Glazing may be a fascinating choice of material for the designer, but in the installation of curtain walls or large fixed glasses, the safety issues should never be compromised.

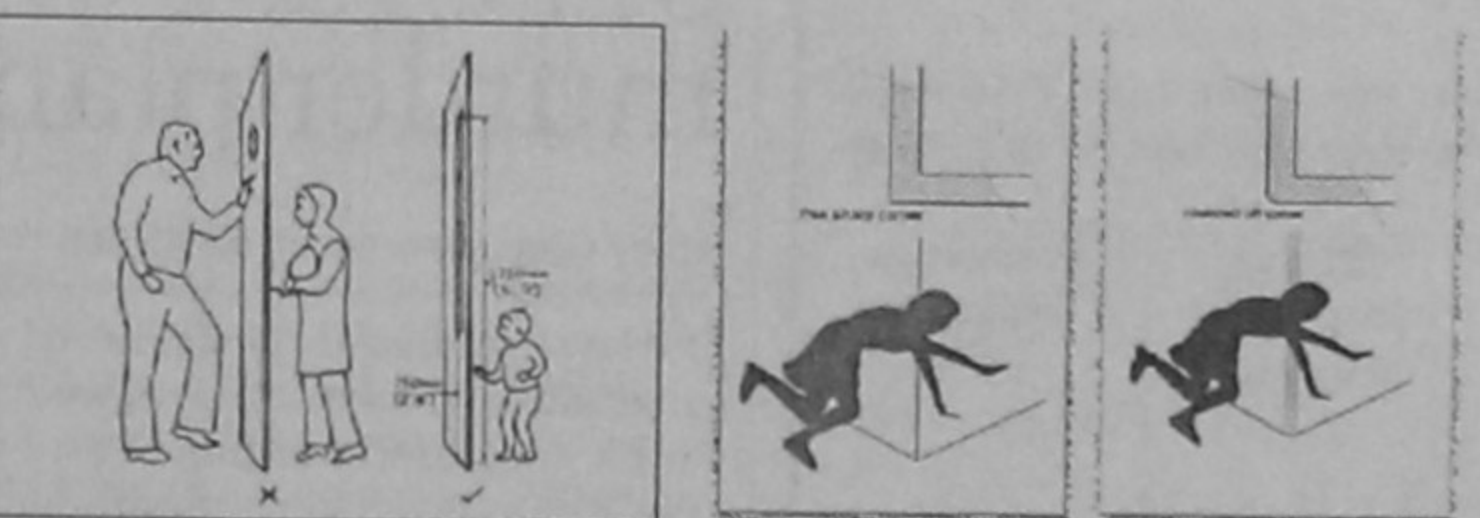


Architect's preference of style over safety: installation of fixed glazing in the danger zone.

To achieve style and clarity in design, architects in our country sometimes overlook the safety measures. As shown in the photographs, glazing in the stair core may be responsible for a serious accident to a child or for that matter anyone.

Doors and wall details

Doors are responsible for many minor to severe household accidents of children. Finger injuries are very common with doors. But adopting some detail measures can easily solve the problem. Also safe operation of wood swing door reduces chances of finger injury to children.



Door details and wall details for child safety.

Children after the age of 18 months move freely all around the apartment. In case of a swing door it's very difficult to assume the child's presence on the other side of the door. This obstruction of vision may lead to accidents. Users must have a clear view ahead of swing doors.

Free sharp corners in the internal space of an apartment can be the cause of fatal accident to falling children. Rounded off corner reduces the risk.

Passage or hall way

The lift lobby and passage are very important spaces of an apartment regarding child safety. These are popular venues within the apartment for children for playing. So the zone needs special attention in design and detailing. The stair core is attached with the lobby or hall way. The most important thing for a child-safe lobby is to provide proper visual indication of the stair core. Children will run fast and do other stunts in this lobby and without the indication of the stairway they may be unaware about the presence of the stairway. This visual indication is achieved in design by providing variation in colour of floor tiles of the hall and the stair. If the colour of the tiles of hall floor and the stair landings are different then the chances of getting prior warning of a stairway is greatly enhanced. The floor area of the lobby which is immediate after the stairway should have tiles with colour similar with that of the stairs.



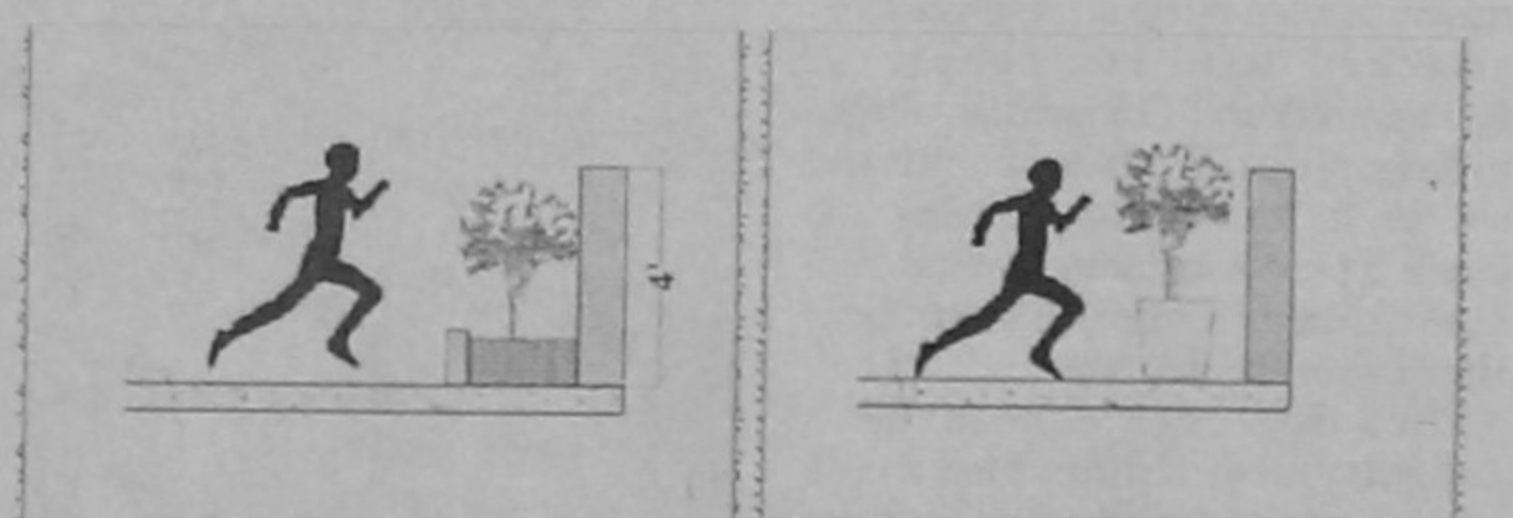
No indication or change in colour before the stairway.

Same colour in the hallway and stair floor leaves no indication of danger for the children

This delicate design consideration is not properly followed in most of the apartment buildings in our country. The variation of tiles colour is designed not to achieve child safety rather for decorative purpose. In many of the cases, there exists no variation of floor colour in the hallway.

Rooftop

The rooftop is the most common ground of child accidents in an apartment. It is not fair to restrict children from going to the rooftop to avoid accidents as practiced in many of the tall apartment buildings in our country. The rooftop is for many of the apartment children the only prospect for fresh air and the clear sky. Restricting them from playing on the rooftop will only force them to the unhealthy ways of entertainment like playing computer games for hours. But for the mental health of the child it is very important to have some hours of running, jumping or screaming with friends in an open area. We should rather concentrate on means of design to reduce the dangers of playing on the rooftop.



Rooftop gardening may restrict children from coming nearer to the danger zone

Designing with vegetation at the periphery of the rooftop may restrict children from coming nearer to the danger zone while playing.



Climbing routes must be avoided in rooftop design

Rooftop landscaping should not provide climbing routes for children.

Another very important design consideration for rooftop is to be aware of not providing any climbing route for children. Design of the seating and the corner vegetation provides clear and easy climbing route for a child which is very dangerous and a serious error in design. Architects should be careful about these minor details.

Preventing injury is an integral part of child survival. Child health programmes cannot be considered complete without injury prevention at the core. The progress Bangladesh has made in the reduction of child mortality from infectious diseases has revealed that accidents and injuries are now a major concern for child survival.

Millennium Development Goal (MDG) and National Plan of Action for Children 2004-2009 have both identified child injury prevention as one of the most important focuses. Architects must join the campaign. Detail design considerations should be adopted in the apartments of our country. A little awareness of the architect can prevent a lot of accidents and injuries to the children.

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