Injuries among Adolescents

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ABSTRACT

Background: ***Injuries are the leading cause of morbidity and mortality worldwide especially among adolescents. Despite their enormous threat to health, they have not received reasonable attention until in the recent past. This paper reviews the various causes of injury, established the high rates of injuries among adolescents, and identified the various factors responsible for high injury rates among adolescents and the associated socioeconomic variables. Finally, it looked into various preventive strategies with a view to reducing the burden in the society.***

Method: ***A review of published literatures on injuries from reputable journals, public heath textbooks and internet search using PubMed and Google search engines.***

Result: ***Injuries contribute a lot to health related and disease burden worldwide being more prevalent among adolescents. A reasonable percentage of the world's mortality rate is accounted for by injuries, road traffic accidents being the leading cause world over. Male adolescents have higher rates compared to their female counterparts and injuries are commoner among older adolescents especially those from minority ethnic group. Low socioeconomic class, living with single parent or non-biological parents were found to be contributing factors to high rate of injury. Individual factors like bad temperament, aggressive behavior, political instability, natural disaster etc. were also contributory.***

Conclusion: ***Injury is a big threat to the general well-being of adolescents and could have sequelae which might follow them into adulthood. It also imposes a great financial burden to the family and health facilities. Creating awareness to the general public, putting in place and strengthening various preventive strategies are all needed.***

Keywords: ***Injury, adolescents***

INTRODUCTION

Injuries are among the leading causes of disability and death worldwide[1]. They are as old as mankind and may have caused much harm. There have been series of war in human history all leading to different forms of injuries but not much emphasis was paid to it. In this age, violence and terrorism have become the order of the day and have left so many people homeless, injured and prone to several other forms of injuries. The same is true of natural and man-made disaster which occurrence is rather on the increase.

It was not until recently that public health practice started focusing on it on finding out that they pose a serious health threat, occur frequently and can be prevented in most situations[2].The historical neglect of this area of public health is because it was traditionally viewed as accidents or random events of which much could not be done about[1]

Injuries occur commonly among adolescents, who represent a significant percentage of the population meaning that a great attention should be paid to them. In Nigeria, for example, adolescents represent almost 23% of the general population[3]. This goes a long way to show that a greater part of the population is prone to cause of morbidity and mortality. The high level of injuries in adolescents could actually be attributed to the diversity of high energy physical activities they get involved in, risk taking attitudes and lack of experience[4]. Also, adolescence period is one characterized by a lot of exuberance and adventure.

Injury is a bodily lesion at the organic level, resulting from acute exposure to energy (mechanical, thermal, electrical, chemical or radiant) in amounts that exceed the threshold of physiological tolerance. In some cases (e.g. drowning, strangulation, freezing), the injury results from an insufficiency of a vital element[5].Adolescence is a period of transition from childhood to adulthood; therefore, an adolescent is one between the ages of 10-19years[6].

It was noted that an estimated 5 million people worldwide died from injuries in 2000- a mortality rate of 83.7 per 100,000 populations and it accounted for 9% of world's death in 2000 and 12% of world's burden of disease[5].This was on a general note, but as was noted earlier, adolescents constitute a reasonable number of the population, they are immensely affected too.

Also, nearly 4.7 million adolescents were non-fatally injured in 2003 and 12,200 died from injuries in 2002[7]. This number is alarming. In the USA, injuries were noted to be responsible for more deaths in adolescents than all other diseases combined and an estimated 15000 adolescents die each year as a result of injury[8]. Also, in the USA, suicide is the 3rd leading cause of death in those 10-14 years while homicide is the 2nd leading cause of death in those 15-19 years (USA).[9]

Prevalence of injuries among adolescent was found to be between 65-69%[10,11]. The burden of disease related to injuries, particularly road traffic injuries, inter-

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personal violence, war and self inflicted injuries, are expected to rise dramatically by the year 2020[5, 12]. Road traffic injuries was found to be the leading cause of injury related deaths worldwide.[5, 13]

Injury, like infectious diseases, results from agent-host interaction[14]. The agent here is energy which is absorbed by the host to cause injury. Energy can be mechanical, thermal, chemical, radiation etc. The reservoir is the place in the environment where the agent is found. Vehicles and vectors are mechanisms which transport energy from the reservoir to the host. Vehicle is an inanimate object e.g. a car while vector is an animate e.g. a dog that bites a child.

Injuries can be classified into unintentional and intentional causes[5].

Some examples of unintentional injuries include road traffic injuries, poisoning, falls, fires, drowning. Other unintentional injuries are exposure to animate and inanimate mechanical forces (including firearms); exposure to electric current, radiation and extreme temperature and pressure, and to forces of nature; and contact with heat and hot substances, and venomous plants and animals. Intentional injuries could be self-inflicted, e.g. suicide, or non-self-inflicted, e.g. homicide, war related injuries and torture.

Distribution of causes of injury among adolescents are road traffic injuries-25%, poisoning-6%, falls-6%, fires-5%, drowning-9%, self-inflicted violence-16%, inter-personal violence-10%, war-6%, other-17%[5]. Road traffic injury accounts for high mortality rate in Africa, 28.3/100,000 (highest of all WHO regions). Road traffic injury deaths are second only to HIV/AIDS in some African countries.[15]

FACTORS ASSOCIATED WITH ADOLESCENT INJURY

Just like infectious diseases, injuries have various factors that influence their occurrence. Generally, factors involved in injuries among adolescents can be categorized as follows: individual factors (bad temperament, drop out, aggressive behavior, poverty, mental illness), family factors (low parental education, minority ethnic group, large family size, overcrowding, poverty, exposure to violence within the family) and environmental factors (political instability/unrest, natural disasters, exposure to violent films, lack of good adult-role models, access to tobacco, alcohol, drugs, easy access to firearms, unsafe school environment).

Gender: Male adolescents were found to have a higher rate of injuries compared to their female counterparts with risk ranging from 1.4 to 3 times that of females[16, 17, 18]. This is probably due to the fact that males get involved in more risky activities that predispose them to injuries and are more adventurous. However, being a female was seen to be a risk factor for domestic violence which may or may not lead to injury[19].

Globally, injury mortality rate among males is twice that of females, but mortality rates from suicide and burns in females are as high, or even higher, than in males.[5, 20]. Males in Africa and Europe have the highest injury related mortality rates[5].Mortality rates from road traffic injuries and inter personal violence in males is almost three times higher than that in females [5]. A male: female ratio of 2.6:1[21].

In trying to reduce injuries resulting from road traffic crashes, the use of seatbelts is advocated. A lot of people still do not make use of it even with the enforcement and penalty attached to its non-usage. It was observed that seatbelt use was higher among females compared to males[20, 22, 23]. This observation could be one of the reasons why males are having higher rates of injuries than their female counterparts.

Age: In these studies[20, 22, 23], seatbelt use rate was seen to increase with age. Thus, its use can be said to be lower for adolescents compared to older people. From this, injury rates following road traffic crashes will be higher among adolescents when compared to adults. As was said earlier, adolescents have a high rate of injuries; among adolescents, risk for injuries was found to increase with age. Accidental injuries (unintentional) were found to be most frequent in older adolescents (14-17 years of age) [24]. Likewise, for intentional injuries, older adolescent have a higher risk compared to younger ones[25].

Most of the older adolescents are beginning to leave home and no longer under the direct supervision of their parents or caregivers. Because of this, they get involved with all sorts of things which may lead to injury. Also at this time, they start drinking alcohol, of which most of them get drunk, drive in the process and get involved in road traffic accidents. Still under the influence of alcohol, they might get into a fight and get injured in the process.

Ethnic Group: People that belong to the minority ethnic groups in a particular society have higher risk for injuries. For unintentional injuries in the USA, ethnic groups other than Caucasians have 1.5-2 times higher risk[26]. Violence related injuries are about three times higher among blacks than whites in the USA[26]. The same thing applies here in Nigeria where it was found

that gunshot injury rate is rising in the Niger Delta region of Nigeria, a minority ethnic group[27]. These people feel marginalized and sometimes in the process of trying to fight for their right get involved in different forms of violence which lead to injury. Probably also, because they are in the minority, they may not have access to the best of opportunities available in the society, like quality education; most of them end up as drug addicts, which will in one way or the other lead to violence with consequent injury.

Socioeconomic Class: Unintentional injuries risk is higher among those from lower and middle income groups[28]. There seems to be a direct proportional relationship between injury and level of education and income. It is noted that adolescents in higher socioeconomic groups (higher educational status) have a lower rate of violence related injury[29]. Low household education has a high risk [30] and higher education is protective[29]. Children from poor socioeconomic circumstances with mean family income of 130 US Dollars/month have higher risk and prevalence of injuries[31]. Road traffic injuries, a leading cause of injury mortality, was found to be more in commercial motorcycle riders who are not educated[32], so education is very important in injury prevention.

Road traffic casualties were found to be more of young people from poor background[33]. Fatal injuries are higher in rural dwellers and in less developed countries[5]. Children of parents in low socioeconomic group, for example, will probably trek to school (unlike children whose parents can afford to put in boarding school or drive to school). Trekking to school predisposes these children to accidents on the roads and falls. These children are likely not to go home after school hours and more likely to be truants; all of which are positively associated with the risk of injuries.

The finding that socioeconomic status affects the kinds of injury events adolescents experience and level of risk behavior has implications for the design of injury prevention strategies[34].

Family Variable: Adolescents not living with biological parents have a higher risk for injuries[35]. Parenting interventions, most commonly provided within the home, may be effective in reducing child injury[36]. Other risk behaviors associated with adolescent injury are loneliness, hunger, truancy, depression, smoking and drug abuse[10].

There are certain groups of people noted to have high risks for injuries and these are those with some medical conditions. They include people who are overweight[37], depressed[38], attention deficit hyperactive[39]. Others include those with high risk taking behavior e.g. driving without seatbelt, climbing trees, drinking alcohol, smoking and drug use[40].

EFFECTS OF INJURY ON THE ADOLESCENTS

Injuries pose a great threat to the well-being of the adolescents, their families and the society in general. It ranges from physical, emotional, social and economic effects. It also places an enormous burden on the emergency departments[9].

Some specific effects include economic loss - costs of treatment, not working during the course of recovery. There is also school absenteeism with its associated poor performance of the adolescents.

Noted also was the fact that people who have violence induced injuries are more likely to have residual psychological and behavioral problems[41]. This is also supported by the fact that people with traumatic injury especially brain injuries when compared with the general populace have a higher likelihood for psychiatric disorder and eventual prescription of anti psychotic with its associated stigma and cost of drugs[42].

PREVENTION

There are primary, secondary and tertiary levels of prevention.

Primary prevention tries to prevent the events which cause injury by eliminating the mechanisms of energy transfer or exposure[2]. An example is the enactment of traffic safety laws which will help in preventing automobile crashes. Another example is policies to regulate alcohol intake and enforcement of legislation against drunk-driving. Putting fences around swimming pools to prevent people from falling inside it and getting drowned is yet another preventive measure.

Secondary prevention eliminates injuries and reduces their severity once a potential injury producing exposure has occurred. This can be seen in the use of helmets for motorcycle and bicycle riders, use of seatbelt, life vests, bullet proof vest etc[2]. Some of the most effective secondary prevention strategies do not eliminate all injuries. For example, use of motorcycle helmet is very effective in reducing head trauma in motorcycle crashes, but is not effective in preventing trauma to other body regions. Seat belts do not prevent all injuries in vehicle crashes; seat belts help to reduce severity of injury.

In tertiary prevention, reducing the consequences of the injury after it has occurred is the goal. This can be achieved through rapid emergency response and trauma care, social work, physical, occupational and speech therapy as the case may be[2].

Specific injury prevention strategies can also be divided into passive and active intervention[2]. In passive intervention, there is no input or action by the host; active intervention requires that the host take some actions for the intervention to work. Every strategy must incorporate the two. Example of passive intervention is modification in car design to improve brakes or increase energy absorption by the vehicle frame while that of active intervention is the use of seat belts, helmets etc.

CONCLUSION

Injury is a big threat to the achievement of complete physical, social and mental well-being for the adolescents. It has contributed a great deal to the health burden of the society and a lot is being spent on its management.

Rapid urbanization and motorization are major factors to the menace of road traffic injuries, which is the highest cause of injury among adolescents. Many adolescents have also lost their lives from this and another greater proportion sustained various forms of disabling and handicapping injuries.

Most injuries could be prevented. Public health practitioners are beginning to lay emphasis on injury and its prevention. There is hope that with concerted effort by individuals, families and communities, this emerging health threat will be brought under control.

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