ORIGINAL ARTICLE

Parent's and children's judgements about their outdoor environment in relation to children's injuries

Amiri Moussa,[1] Soori Hamid,[2] Ainy Elaheh,[3] Mehmandar Mohammad Reza[4]

Abstract

Objective: To explore views of parents and childrens on safety and danger of outdoor environment, and implications for outdoor activities after school.

Methods: The cross-sectional study was carried out in 2009-2010 and comprised 952 students between 7 and 9 years of age and 942 parents in Tehran. Two separate pre-designed questionnaires were used for children and parent. Data was analysed using SPSS 16.

Results: The response rate of parents' and children's questionnaires regarding to socioeconomic deprivation were 830 (88.1%) from 942 and 932 (97.9%) from 952 respectively. Overall, 224 (27.0%) parents believed that the outdoor places children usually play after school are 'not dangerous,' while 612 (65.7%) children believed that the streets they usually play on are safe. Besides, 238 (28.7%) parents believed that the volume of traffic in their neighbourhood makes crossing roads difficult. There was no significant difference between the responses of less and more economically deprived parents relating to the presence of dangerous places near their home within less than 5-minute walk (66.8% vs. 62.5%), on general safety describing their areas as being 'not dangerous' (25.6% vs. 18.8%) and who did not regard the volume of traffic in local environment as making crossing the road difficult (55.3% vs. 53.4%).

Conclusion: Many parents judged their outdoor places where their children played to be safe. If we assume that the physical environment of the more deprived areas is a more hazardous place than the less deprived areas, it suggests that the risk perception among the more deprived parents is poorer. If so, there is a need to be better informed about hazards in outdoor environment.

Keywords: Environment, Outdoor, Children, Parents. (JPMA 63: 1504; 2013)

Introduction

Every year, road traffic injuries account for approximately 262000 child deaths among children; almost 30% of all injury-related deaths among children. Children use roads as pedestrians, bicyclists, motorcyclists and occupants of vehicles. They may live close to a road, play on a road, or even work on the roads.[1] Modifying products or the environment to provide passive, automatic protection to the individual is one strategy to prevent injuries. Safety standards for numerous articles and fittings have been introduced. Avery and Jackson[2] believed that the environment operates at three levels: the overall macro-environment (including the planning of transport system, the urban and rural environment, and the natural environment), the local environment (including houses, school, and public buildings), and the micro environment, at the level of design of products that people use in their daily lives.

The risk of death varies with different environments and products. For example, amongst children, travelling by a bicycle is more dangerous than travelling by bus. Children living in poor-quality areas are more at risk of accidents.[3,4] Accident risks in the local environment of these children include busy streets, derelict and slum housing, deserted canals, mine shafts, factories, railway lines and heaps of rubbish. Over 95% of child pedestrian road traffic accidents occur in urban areas, and two-thirds of these urban accidents happen on ordinary residential streets.[2]

In some countries large reductions in child pedestrian accidents have been made by re-creating the residential environmental, for example, by drastically reducing speed limits and by providing adequate playing facilities for children, but there is still much to be done. The environmental circumstances surrounding accidents among children are important in relation to the age of the child.[5] Gustafsson[6] believed that all children live in such a dangerous environment that the risk of accident is always present. Braddock et al[7] found that density of children living in an area is highly correlated with rates of child pedestrian accidents. When child density is reduced, this association disappears. The study suggested that the density of children living in an area might be used as a

[1,4]Traffic Police of Iran, [2,3]Safety Promotion and Injury Prevention Research Centre, Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Correspondence: Mehmandar Mohammad Reza. Email: ainy121@sbmu.ac.ir

marker to identify high-risk geographic areas for child pedestrian accidents within a given city.

No road can be completely safe for children, but much can be done to reduce the number and severity of accidents that occur. A large majority of accidents involving children occur in built-up areas, on roads with a speed limit of 40 mph or less.[8] Traffic volume is another important factor that might increase the risk of children's accidents.[9] Drivers' behaviour has also been shown to affect the rate and severity of children's accidents.[10]

Socio-economic status is important in explaining the difference in rates of children's accidents between low- and high-risk areas. Children living and playing in the most deprived environments both at home and playing in the street are at increased risk for injury.[11]

Deprived urban environments are likely to have a different pattern of physical hazards to more advantaged areas.[12,13] To investigate the accuracy of parents' judgements on their local environment, it is essential to have reliable objective information about those environments for comparison.

What parents think about the outdoor physical environment can affect their attitudes and the decision whether or not to allow their children to play outside without an adult. For example, it has been shown that in neighbourhoods in which parents believe there are safe places for children's activities, they are more likely to allow their children to play there.[14] Therefore, if they have an inaccurate judgement about the safety of their local environment, it may increase the risk of children's outdoor accidents.

The aim of the current study was to present some information on parents' judgements about their local environment. Four null hypotheses were specified in advance and one hypothesis was developed during data analyses as follows:

There is no significant difference between less and more economically deprived parents' and children's judgements on the safety of their neighbourhood.

There is no significant difference between less and more economically deprived children's perceptions about the safety of the street they usually play in after school.

There is no significant difference between younger and older children's perceptions about the safety of the street they usually play on after school.

There is no significant difference between boys' and girls' perceptions about the safety of the street where they usually play after school.

Parents' views on the safety of the local outdoor environment influences their decisions about giving permission to their children to play outside the home.

Subjects and Methods

The cross-sectional study was conducted in Tehran, Iran, during 2007-2010 and comprised children studying in primary school classes three and five, and their parents. The study was conducted using a sample of all primary school children in two different socio-economic areas of Tehran. The children were 7-9 years of age and the age group was chosen because earlier studies showed that they engage in the most in-street activities[15] and are more at risk of after-school accidents compared to pre-school or secondary school children.[16] In addition, children up to age nine are physically and mentally vulnerable when playing outside the home alone.[17]

With the cooperation of police officers, nine primary schools in two different socio-economic areas we approached (from 22 districts of Tehran municipality, District 1 represented affluent areas, and District 18 deprived areas). All the selected schools cooperated. The total pupils enrolled were 952, and there were 942 parents. However, for some variables, such as deprivation, 932 children's questionnaires and 830 parents' questionnaires were valid. The children were asked to paste different stickers on the pictures. Although it was a self-completion questionnaire, but adult supervision (teacher, and research assistant) took place. The parents' questionnaire was also self-completed and was taken home to parents by the children from school and collected from the pupils after completion.

All subjects were healthy people and there was no discomfort (physical or psychological), inconvenience, risk or danger to them. Consent from teachers and parents for collecting information from the pupils was obtained and an introductory note stating the purposes of the study was distributed prior to the study.

Data was analysed with SPSS version 16. Chi-square test was employed to investigate the differences between judgements of two groups of parents, and between groups of children's responses about their local environment. Mantel-Haenszel chi-square test was carried out to assess the significance of differences after adjusting for independent factors where appropriate.

Results

The response rate of parents' and children's questionnaires regarding socioeconomic deprivation

Table-1: Parents' views on safety of the outdoor places children usually play after school by age, gender and deprivation.

	Very dangerous	Quite dangerous	Slightly dangerous	Not dangerous	P. value*
	Number(percent)				
Age 7 (n=430)	30 (7.0%)	78 (18.1%)	210 (48.8%)	112 (26.0)	P>0.88
Age 9 (n=400)	26 (6.5%)	62 (15.5%)	200 (50.0%)	112 (28.0%)	
Boys (n=426)	30 (7.0%)	74 (17.4%)	228 (53.5%)	94 (22.1%)	P>0.135
Girls (n=404)	26 (6.4%)	66 (16.3%)	182 (45.0%)	130 (32.2%)	
Less Deprived (n=414)	22 (5.3%)	50 (12.1%)	208 (50.2%)	134 (32.4%)	P<0.01
More deprived (n=416)	34 (8.2%)	90 (21.6%)	202 (48.6%)	90 (21.6%)	
Total (n=830)	56 (6.7%)	140 (16.9%)	410 (49.4%)	224 (27.0%)	-

* Chi-square test, df= 3.

Table 2: Children's views on safety of the street they usually play after school by age, gender and deprivation.

	Safe	Not safe	P. value
Age 7 (n=484)	294 (60.7%)	190 (39.3%)	P<0.05**
Age 9 (n=458)	318 (69.4%)	140 (30.6%)	
Boys (n=502)	332 (66.1%)	170 (33.9%)	P>0.570
Girls (n=440)	280 (63.6%)	160 (36.4%)	
Less deprived (n=466*)	308 (66.1%)	158 (33.9%)	P>0.69
More deprived (n=466*)	300 (64.4%)	166 (35.6%)	
Total (n=942)	612 (65.0%)	330 (35.0%)	-

* Deprivation was identified for 932 children's questionnaires

** Mantel-Haenszel summary chi-square test for stratified data showed no significant difference.

were 830 (88.1%) from 942 and 932 (97.9%) from 952 respectively. Of the total 830 parents, 224 (27%) believed that the places where children in their neighbourhood usually played outdoors were 'not dangerous' (Table-1). There was a significant difference between less and more economically deprived parents' responses (p<0.01). There were no significant differences between parents of older and younger children (p<0.88) or parents of boys and girls (p <0.135).

Of the 830 parents, 654 (78.8%) allowed their children to play outside away from their view. Parents who judged their areas as 'not dangerous' or 'slightly dangerous' were more likely to allow their children to play outside than parents who judged their areas as 'very dangerous' or 'quite dangerous' (n=514; 81.0% vs. N=120; 61%). This difference was still significant after adjusting for age, gender and deprivation (p<0.01).

Of the 942 children, 612 (65%) believed that the street where they usually play after school was a safe place (Table-2). There was no significant difference between responses of boys and girls (p<0.57) and between less and more economically deprived children (p>0.69).

A playground, park, or play area was accessible for 830 (78.1%) within less than 10-minute walk. Children from the more deprived areas 416 (70.2%) had more access to a play area, park or playground than children from the less deprived households (p<0.01). There were no significant differences by gender and age.

With regard to children's accidents, of 606 (73.0%) parents thought of their local environments as 'extremely dangerous', 'quite dangerous', or 'slightly dangerous'; 18 (4.3%) parents were not sure (Table-3). There was significant difference between less and more economically deprived parents' views about danger in their area (p<0.01). However, Mantel-Haenszel summary chi-square test for stratified data (Not dangerous versus other responses) showed no significant difference between them

Table-3: Parents' views on danger in their areas with regard to children's outdoor accidents by age, gender and deprivation.

	Extremely dangerous	Quite dangerous	Slightly dangerous	Not dangerous	Not sure	P. value*
Age 7 (n=432)	24 (5.6%)	96 (22.2%)	196 (45.4%)	90 (20.8%)	26 (6.0%)	P>0.928
Age 9 (n=398)	26 (6.5%)	92 (23.1%)	176 (44.2%)	94 (23.6%)	10 (2.5%)	
Boys (n=426)	30 (7.0%)	88 (20.7%)	194 (45.5%)	98 (23.0%)	16 (3.8%)	P>0.638
Girls (n=404)	20 (5.0%)	100 (24.8%)	178 (44.1%)	86 (21.3%)	20 (5.0%)	
Less deprived (n=414)	14 (3.4%)	74 (17.9%)	208 (50.2%)	106 (25.6%)	12 (2.9%)	P<0.01**
More deprived (n=416)	36 (8.7%)	114 (27.4%)	164 (39.4%)	78 (18.8%)	24 (5.8%)	
Total (n=830)	50 (6.0%)	184 (22.7%)	372 44.8%)	184 (22.2%)	36 (4.3%)	-

* Chi-square test, df=3

** Mantel-Haenszel summary chi-square test for stratified data showed no significant difference.

(p>0.175). There was no significant difference between parents' responses by age and gender of children.

Besides, 213 (25.7%) parents believed that the volume of traffic in their neighbourhood made crossing the streets very difficult or difficult. However, there was no significant difference between responses of parents of younger and older children, parents of boys and girls, and different socio-economic groups.

Of the 830 responses, 538 (64.8%) parents believed that there was at least one dangerous place in their neighbourhood and 122 (14.7%) were unsure. There was no significant difference between less and more economically deprived parents. However, many more deprived parents were unsure about hazardous places near their homes compared to the less deprived parents (p<0.01). Altogether 648 (78.1%) parents reported, main roads were the most common hazardous place in many areas. Other hazardous places were building sites 80(9.6%), railway or metro line 67(8.1%), old buildings 35 (4.2%), dumps 29 (3.5%) and other places 16 (1.9%).

Discussion

Differences in parents' judgements of the hazards in the outdoor environment influence their attitude to children's independent after-school activities.[14] In this study, about one-third of parents judged the local environment where their children usually play after school as 'not dangerous'. Differences were not found by gender and age of children or by socio-economic deprivation. There was no significant difference between the responses of less and more economically deprived parents relating to the volume of traffic in their areas. More deprived parents compared to the less deprived parents were twice as likely to be unsure about the safety of their local environment and whether there was any dangerous place in their respective areas. Parents who judged their areas as 'not dangerous' or 'slightly dangerous' were more likely to allow their children to play outside than parents who judged their areas as 'very dangerous' or 'quite dangerous'.

Sandels[12] showed that more than half of Swedish parents in Racksta were satisfied with their area regarding children and the traffic environment. According to one US survey,[14] approximately one-half of parents believed that, with regard to children's accidents, the streets in their neighbourhood were safe or very safe. There could be two explanations for the lower proportion of parents' expressing satisfaction in this study compared to the Swedish and American ones. They may be because of differences in the safety of the physical environment in different study settings, or because of differences in the parents' perception of safety and danger in their environment. Neither this nor previous studies have tested the accuracy of parents' responses.

Some studies have demonstrated that more deprived areas are more hazardous for children's activities than the less deprived areas.[4,5,11] Therefore, it might be assumed that parents who live in the more deprived areas are less likely to perceive hazards in their neighbourhood than parents in the less deprived areas. The validity of this assumption is open to question.

For the children's responses, there was no significant difference in perceptions between ages, genders and less and more deprived groups relating to the safety in their streets. This was not surprising as earlier research has demonstrated that many elementary school age children fail to comprehend traffic vocabulary, signals, and patterns,[12] and are unable to distinguish safe places from dangerous ones.[15]

Children from the more deprived areas had easier access to a play area, park or playground than children from the less deprived areas. This finding differs from earlier studies[16-18] which showed that the main difference between areas with a high accident rate and other areas was the lack of safe play areas. However, the adequacy of adult supervision to get them to these places, the attractiveness of the playgrounds and the safety of the play areas needs to be studied. These factors may influence the risk of childhood accidents on the way to or inside the play areas.[19,20] For instance, some researchers believe that poorer children may have less supervision than the more affluent children.[2]

Rivara et al[14] in a study of reported parental attitude and practice toward primary schoolchildren as pedestrians showed that neighbourhood safety had no real influence on whether or not parents allowed children to cross busy roads alone. However, the study argued that parents, who estimate their local outdoor environment as a safe place for children in spite of the risk of children's accidents, may expose their children in more risky situations than parents who do not think so. This study found similar results for children's playing outside alone and showed that parents' judgements about their outdoor environment influence their permission to children to play outside. Parents who perceived their local environment as 'not dangerous' or 'slightly dangerous' were more likely to let their children to play outside, out of their sight. This study was the first of its kind conducted in Tehran and its samples were from various socioeconomic statuses. As such, the findings could be generalised to the total population of Tehran.

It could be noted that parents' attitudes and perceptions

to the hazards in their neighbourhood can affect their attitudes to circumstances of children's outdoor activities after school and whether they do or do not allow them to play outside without an adult. The study does not demonstrate whether parents' judgements about their environment are accurate or not.

One obvious limitation to the current study is the lack of information about the local environment to validate parents' and children's perceptions. In addition, duration of parents' residency in their areas was not asked. Traffic volume can change during the year. Also, some hazards such as the speed of traffic, number of parked cars and drivers' behaviour are other important factors that were not specifically investigated in this study.

Another limitation of this study is the generaliseability of the findings. Although parents' and children's views on their outdoor environment could be referred to many similar communities, but, the construction of any environment and risk of outdoor injuries in different areas vary and for any hazardous environment this should have been determined separately.

Conclusion

Further study on measuring outdoor environmental risk factors in relation to children's injuries is needed. It is essential that hazards in the children's outdoor environment are made known to their parents. This may require an educational programme. Before that, hazards should be identified by environmental studies in different parts of the city. It would be helpful to devise ways to reduce the necessity for parental supervision through environmental interventions.

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