**Association of road traffic injuries with independent mobility of adolescents in a megacity of lower middle-income country**

**ABSTRACT**

**Background**

Road traffic injuries (RTIs) are the number one cause of mortality for adolescents 10 to 19 years old. The objective of our study was to assess the association of independent mobility of adolescents with road traffic injury in an urban lower middle-income setting.

**Methods**

This was a cross sectional survey of adolescent students in 75 schools that were selected through cluster random sampling to include both private and the public schools. Data was collected between September and December 2014 in Karachi, Pakistan. We approached students of grades 6-10 from these schools and obtained parental consent and adolescents’ assent. Each student was asked to fill a written questionnaire.

**Results**

We have included survey of 1264 adolescents of age 10-19 years out of which 60% were girls. Around 60% of these adolescents were enrolled in private schools. In the final multivariable logistic regression model 1 for adolescents 10-19 years; boys (aOR = 1.58; 95% CI = 1.15, 2.18) were more likely to get road traffic injuries. In model for age group 10-15 years, adolescents who were allowed to cross main roads alone (aOR =1.43; 95% CI = 1.02, 1.99) were more likely to get road traffic injuries. In both the models 1 and 2, adolescents who did any activity outside home on their own on last weekend (aOR=1.68; 95% CI = 1.02, 2.80) (aOR=1.94; 95% CI = 1.09, 3.57) and when they had mix pattern of weekend activities with adults as well as some activities alone (aOR=1.63; 95% CI = 1.03, 2.64) (aOR=2.25; 95% CI = 1.32, 4.02) respectively were associated with road traffic injuries.

**Conclusions**

Measures of independent mobility of adolescents are associated with increased risk of road traffic injuries.

**Keywords**

Adolescents, Independent mobility, road traffic injury, low income country

**Background**

Independent mobility – the freedom of children and adolescents to move around without being accompanied by an adult can contribute to physical activity and positively impact psychological, social, cognitive and spatial development (1, 2). The independent mobility have health implications; benefits for obesity, hypertension, diabetes and many other non-communicable diseases but may also increase road traffic injuries (3, 4).

Adolescents are vulnerable to road traffic injuries (RTIs), which are the leading cause of deaths in adolescents aged 10-19 years. In 2013, the RTI death count in adolescents was 115,186 globally, out of which 90% occur in developing countries (5).There is higher road traffic fatalities and injuries among pedestrians, cyclists and motorcyclists in low and middle income countries where the built environment is least likely to be adapted to the needs of vulnerable road users (6).

The studies on RTI in children or adolescents during mobility for school assessed the associations of speed, traffic volume and mode of travel with pedestrian injuries. Research on independent mobility of adolescents and RTIs is scarce and an association between independent mobility and road traffic injuries has not been established - a study from New Zealand showed that adult accompaniment with 5 to 12 years old was associated with reduced pedestrian injury risk but this result was statistically insignificant (4) whereas a study from India showed no association of road traffic injuries with independent mobility of children 11-14 years old (7).

Independent mobility to school is an opportunity for a regular physical activity. However, the built environment in Karachi is not favorable for walking, cycling and outdoor play. It is important to know whether independent mobility has an increased risk of RTI in order to decide on advocating independent mobility for adolescents. The objective of this study is to determine the association of adolescents’ independent mobility with road traffic injury in an urban lower middle-income setting of Karachi.

**Methods**

*Study design:* This was a cross-sectional study conducted during September till December in 2014.

*Setting:* The study was conducted in schools in Karachi, Pakistan. Altogether 75 schools participated in the study, out of which 26 (34%) were public schools and 49 (65%) were private schools. Cluster random sampling was applied to select public and private schools. We obtained permissions to conduct the study from the principal of each school by explaining the purpose of the study. A parental permission letter giving details of the study was distributed to each student. A week’s time was given for students to get the letters signed by their parents or guardians. We ascertained that a weekend fell in between before the research assistants’ second school visit, to allow for adequate time for parents to read the permission letters.

*Participants:* Adolescents (aged 10 to 19 years) in grades 6 to 10 were enrolled from schools. Only those students who had assented to participate and whose parents had given them permission to enroll in the study were included.

*Variables*

*Outcome:* Any road traffic injury that resulted in any first aid or consultation in healthcare setting

*Exposures:* Parental licensing to independent mobility of adolescents was asked by whether they were allowed to cross main road, travel to and from school alone, travelling in bus and activities alone on the weekend. The responses were either yes or no.

*Data sources/measurements:* All the information was asked from adolescents in a written questionnaire. The study questionnaire for school adolescents was available in Urdu and English. The questionnaires had multiple choice questions. We piloted the study questionnaires to assess their effectiveness, acceptability, and clarity for study participants, and modifications were made accordingly before launching the main data collection process. For data collection, research assistants were trained about administering the questionnaires. Each question in the data collection tool was explained to students by research assistants to ensure clarity in comprehension. The questionnaires took approximately 25 minutes to be filled by a class of students.

*Study size:* The sample size for the original study was 1,270 school students with the assumption at least 50% students may be active commuters in the study population with 95% confidence level and a bound-on error of ± 5%. Since there was no past information on adolescents’ school mobility patterns in Pakistan. The sample size required after multiplying with design effect of 3 and inflating the sample size by 10% to account for non-responders was approximately n=1267. The size of each class in schools is 15-30 students so list of around 100 schools was randomly generated with 40% public and 60% private schools to get sample of 1264 school adolescents. This percentage share of public versus private schools depicts the enrollment of children in urban areas in Pakistan (8).There were numbers of classrooms/sections in school for our desired Grades 6-8. We attempted to have equal representation of grades overall in total sample of schools, so the research team used to inform which grade they want to survey.

For the current study objective, we believe the sample size requirement is enough if we have 10 or 25 events (outcomes) and as many non-events per variable in final multivariable model according to events per variable (EPV) rule (1). The expected events should be 90 by10 EPV rule and 225 by 25 EPV using 9 parameters (minus reference category) in final model. For age 10-19 years, data has 265 events of RTIs and 999 non-events. For age 10-15 years, we have 196 events and 780 non-events. In 10-15 years of age, we have enough events by 10 EPV rule and only fell short of enough sample size by 25 EPV rule.

*Statistical analysis****:*** We performed the analysis using R (9). Categorical variables are described using frequencies and percentages. We used logistic regression to estimate unadjusted and adjusted associations as well as 95% confidence intervals (CI) between exposures (indicators of independent variables, age and gender) and the outcome (RTIs). The previous literature has not categorically defined age for assessing independent mobility, but various studies had used age ranges between 5-15 years. The eligibility criteria of our study were grades and not age. We were interested in independent mobility of adolescents therefore we selected minimum age of 10 years and excluded above 19 years from our data points which is relatively big age for assessing independent mobility. We have developed two models based on age groups, the first one is for 10-15 years old as per the literature but we also developed of complete age range of adolescents 10- 19 years.

**Results**

Data of 1264 10-19 years old adolescents were included in the study with girls in majority (60%). Around 85% of the adolescents reported no adult accompaniment on their school travel. Overall 21% of the adolescents reported road traffic injuries.

In the unadjusted analyses of model 1 for age 10-19 years and model 2 for age 10-15 years, boys (OR 2.24, 95% CIs 1.7, 2.95) and (OR 1.89, 95% CIs 1.38, 2.59), parents licensing of adolescents to cross main roads alone (OR 1.64; 95% CI 1.25, 2.16) and (OR 1.66; 95% CI 1.21, 2.28), allowed to use public buses (OR 1.92; 95% CIs 1.39, 2.63) and (OR 1.76; 95% CIs 1.17, 2.63), adolescents who were on their own for weekend activity (OR 2.51; 95% CIs 1.63, 3.96) and (OR 2.64 95% CIs 1.57, 4.63) or had mix of alone and accompanied weekend trips (OR 2.07; 95% CIs 1.34,3.29) and (OR 2.69; 95% CIs 1.61,4.7) have greater odds of RTIs respectively for both the models.(Table 1 and 2)

In the adjusted logistic regression model 1 for age 10-19 years, boys (aOR = 1.58; 95% CI = 1.15, 2.18), adolescents who did any activity outside home on their own on last weekend (aOR=1.68; 95% CI = 1.02, 2.80) and when they had mix pattern of weekend activities with adults as well as some activities alone (aOR=1.63; 95% CI = 1.03, 2.64) have greater odds of RTIs. The four variables showed risk of RTIs with non-significant confidence intervals; age 15-19 years compared to 10-14 years (aOR = 1.12; 95% CIs 0.83,1.50), alone in school-home trip compared to accompaniment with adult (aOR = 1.01; 95% CIs 0.64,1.64), allowed to cross main roads (aOR = 1.32; 95% CIs 0.99,1.77) and use of public bus (aOR = 1.28; 95% CIs 0.89,1.82).

In model 2 for age 10-15 years old, adolescents who were allowed to cross main roads alone (aOR =1.43; 95% CI = 1.02, 1.99) and adolescents who did any activity outside home on their own on last weekend (aOR=1.94; 95% CI = 1.09, 3.57) and when they had mix pattern of weekend activities with adults as well as some activities alone (aOR=2.25; 95% CI = 1.32, 4.02) have greater odds of RTIs (Table 3). Alone in school- home trip compared to accompaniment with adult (aOR = 1.10; 95% CIs 0.92,1.91), and use of public bus (aOR = 1.29; 95% CIs 0.82,1.99) showed risk of RTIs but with effect size in both protective and risky direction.

**Discussion**

This study shows that some measures of independent mobility in adolescents are associated with RTIs such as allowed to cross main roads and weekend activities, while use of public bus and school trips are not associated with RTIs in adolescents. For models, both age range 10-15 years and 10-19 years, weekend activities were significantly associated with RTIs whereas allowed to cross main roads was associated with RTIs in 10-15 years old.

The finding that adolescents who are allowed to cross main roads have greater odds of RTI is consistent with previous studies finding that the number of streets crossed by children and adolescents is associated with injuries(10). In our study, allowed to cross main road came out to be significant in young adolescents 10-15 years and not in 10-19 years probably because adolescents above 16 years gain more experience with exposure. The environment of Karachi is devoid of safe road environment for pedestrians - for example there are no pedestrians’ signals to assist in crossing roads. The vehicles do not give way to pedestrians at crosswalks. The vulnerability of adolescents as pedestrians is two-folds in such risky road environment due to their risk-taking approach. A qualitative study from India – a neighboring country of Pakistan with similar road environment – reported that adolescents display various distracted behavior as pedestrians such as using ear phones and mobile phones as well as talking and playing with friends (12). The risky behavior of adolescents is because of their impulsiveness due to their developing brain stage (11).

The activities during the last weekend are associated with RTIs in adolescents. The odds were greatest when adolescents were alone or with their peers for weekend activity or had mix pattern of activities either with adults or alone when compared to activities carried out in adults’ accompaniment. It is understandable that leisure time activities with peers provoke riskier behaviors. Previous studies have shown that children and adolescents with unsafe road safety behaviors have peers with similar behaviors (13).

In our study, going back to home from school alone had slightly higher risk among 10-19 years old (aOR 1.01; 95% CI 0.64-1.64) and among 10-15 years (aOR 1.10; 95% CI 0.92-1.91). The 95% CIs showed both protective and risky effect in both the models. School journey is a regular and fix trip for adolescents which might acclimatized them to daily route and traffic pattern. The previous study in Auckland showed protective effect of adult accompaniment in school trips but not significantly (aOR 0.31; 95% CIs 0.07-1.49 (4).

Similarly, allowed to travel on public buses show risk but with effect size compatible with both protection and risk. These non-significant CIs implicate that within the sample of these children, there were some at risk compared to others who are protected. It would be interesting to identify those factors/traits which make some children vulnerable to RTIs compare to others.

More boys had RTI, but this is not a surprising finding in the setting of Karachi. In our study context, boys take care of chores outside home (1). The study from India, which is a similar setting to ours reported, boys had more road trips than girls (14) . Boys get parental licensing for many activities compared to girls. Boys also show less risk perception than girls in general as well as in roads (15).

The two models which were constructed separately based on age group didn’t show much differences. The direction of odds was same in both models with some differences in magnitudes.

We didn’t use age variable as confounder in 10-15 years’ model as we already stratified the model based on age.

**Limitations**

There are limitations in this study. First, a temporal association between the exposure and the outcome was not established because the questions on exposure were about current behavior whereas the question on the outcome (RTI) was about lifetime experience.

Second, details on mode of RTI was not collected. The details whether injury occurred to adolescents as pedestrians or occupants of vehicles could further help to assess the cause.

**Conclusion**

Indicators of independent mobility in adolescents such as allowed to cross main roads and weekend activities alone are associated with road injuries. Other indicators although showing increase risk are statistically non-significant such as alone in school-home journeys and allowed to travel on public buses. The implications of association of independent mobility with RTIs could be further drastic on the already sedentary lives of adolescents. The independent mobility empowers adolescents for increase physical activity with perceive benefits of it. It is important for urban planners, environmentalists and public health practitioners to push for safe road environment so that young pedestrians and cyclists could be promoted for independent mobility. The need for road safety curriculum in schools could be a strategy to create awareness on how to use road traffic environment safely.

Table 1: Univariate association of road traffic injury with independent variables in adolescents’ age 10-19 years (n=1264)

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **No road traffic injury**  **N=999** | **Road traffic injury**  **N=265** | **OR (95% CIs)** |
| **Age groups**  10-14 years  15-19 years | 600(60.1)  399(39.9) | 146(55.1)  119(44.9) | 1  1.23(0.93,1.61) |
| **Gender**  Girl  Boy | 638(63.9)  361(36.1) | 117(44.2)  148(55.8) | 1  2.24(1.7,2.95) |
| **Type of School**  Private  Public | 589(59.0)  410(41.0) | 164(61.9)  101(38.1) | 1  0.88(0.67,1.17) |
| **Accompaniment in school-home journey**  Either with parent or any other adult  Alone or with someone of same age  Mix travel pattern; alone or with parents | 115(11.5)  849(85.0)  35(3.5) | 26(9.8)  231(87.2)  8(3.0) | 1  1.2(0.78,1.92)  1.01(0.4,2.35) |
| **Adolescent allowed to cross main roads**  No  Yes | 590(59.1)  409(40.9) | 124(46.8)  141(53.2) | 1  1.64(1.25,2.16) |
| **Adolescent allowed to go on public bus**  No  Yes | 834(83.5)  159(16.5) | 192(72.5)  73(27.5) | 1  1.92(1.39,2.63) |
| **Adolescent activity over the weekend**  With a parent or other adult  No activity on the weekend  On own or with other young person  Mix activities either with parents or alone | 200(20.0)  126(12.6)  323(33.3)  340(34.0) | 29(10.9)  13(4.9)  121(45.7)  102(38.5) | 1  0.71(0.35,1.39)  2.51(1.63,3.96)  2.07(1.34,3.29) |

Table 2: Univariate association of road traffic injury with variables of independent mobility in adolescents’ age 10-15 years (n=976)

|  |  |  |  |
| --- | --- | --- | --- |
| **Variables** | **No road traffic injury**  **N=780** | **Road traffic injury**  **n=196** | **OR (95% CIs)** |
| **Age groups** | 13.39(1.31) | 13.57(1.23) | 1.11(0.99,1.27) |
| **Gender**  Girl  Boy | 484(62.1)  296(37.9) | 91(46.4)  105(53.6) | 1  1.89(1.38,2.59) |
| **Type of School**  Private  Public | 516(66.2)  264(33.8) | 127(64.8)  69(35.2) | 1  1.06(0.76,1.47) |
| **Accompaniment in school-home journey**  Either with parent or any other adult  Alone or with someone of same age  Mix travel pattern; alone or with parents | 94(12.1)  654(83.8)  32(4.1) | 19(9.7)  171(87.2)  6(3.1) | 1  1.29(0.78,2.24)  0.93(0.32,2.41) |
| **Adolescent allowed to cross main roads**  No  Yes | 498(63.8)  282(36.2) | 101(51.5)  95(48.5) | 1  1.66(1.21,2.28) |
| **Adolescent allowed to go on public bus**  No  Yes | 681(87.3)  99(12.7) | 156(79.6)  40(20.4) | 1  1.76(1.17,2.63) |
| **Adolescent activity over the weekend**  With a parent or other adult  No activity on the weekend  On own or with other young person  Mix activities either with parents or alone | 161(20.6)  85(10.9)  257(32.9)  277(35.5) | 19(9.7)  9(4.6)  80(40.8)  88(44.9) | 1  0.9(0.37,2.02)  2.64(1.57,4.63)  2.69(1.61,4.7) |

**Table 3:** Multivariable logistic regression of road traffic injury with variables of independent mobility in adolescents

|  |  |  |
| --- | --- | --- |
| Variables | Model 1 (Adolescents age 10-19 years)  Odds ratio 95% CIs | Model 2 (Adolescents age 10-15 years)  Odds ratio 95% CIs |
| **Age**  10-14 years  15-19 years | 1  1.12(0.83,1.50) |  |
| **Gender**  Girls  Boys | 1  1.58(1.15,2.18) | 1  1.32 (0.92,1.91) |
| **Accompaniment in school-home journey**  Either with parent or any other adult  Adolescent Alone or with someone of same age  Mix travel pattern; alone or with parents | 1  1.01(0.64,1.64)  0.94(0.36,2.23) | 1  1.10(0.92,1.91)  0.74(0.25,1.99) |
| **Allowed to cross main road alone**  No  Yes | 1  1.32(0.99,1.77) | 1  1.43(1.02,1.99) |
| **Allow to travel on public buses**  No  Yes | 1  1.28(0.89,1.82) | 1  1.29(0.82,1.99) |
| **Any activity outside home on last weekend**  With a parent or other adult  No activity on the weekend  On own or with other young person  Mix activities either with parents or alone | 1  0.68(0.33,1.34)  1.68(1.02,2.80)  1.63(1.03,2.64) | 1  0.86(0.36,1.95)  1.94(1.09,3.57)  2.25(1.32,4.02) |

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**Appendix**

**Urban School Children Travel patterns in Karachi, Pakistan**

**A questionnaire for students**

* Please answer the questions as best you can – there are no right or wrong answers.
* We will not know who filled in this questionnaire, only the class it was completed in.
* No one at school will see your completed questionnaires.
* Please ask if you have any questions.

**TRAVELLING TO AND FROM SCHOOL**

1. **How did you get to school this morning and also which safety precaution you used while coming to school?**

|  |  |
| --- | --- |
| *Travel mode*  *(Only tick one box, to show the main method you used)* | *Safety practice*  *(Tick either yes or no to safety practice [that you used today]in front of the mode of travel that you ticked)* |
| □ Walked most or all the way | Zebra crossing to cross the road  □ Yes □No |
| □  Cycled |  Helmet  Yes No I don’t have |
| □  School bus |  Seat belt  Yes No Not available |
| □  Public bus |  Seat belt  Yes No Not available |
| □Car |  Seat belt  Yes No Not available |
| □  Motorcycle |  Helmet  Yes No I don’t have |
| □ Other mode *please write in*: ………………………………………………………………. | |

1. **Is this your usual way to go to school?**

|  |  |
| --- | --- |
|  | Yes |
|  | No then how do you come to school usually? \_\_\_\_\_\_\_\_\_\_\_ ­­­­­­­­­­­ |

1. **Who did you travel to school with this morning?**

*(Tick as many boxes as you need)*

|  |  |
| --- | --- |
|  | Travelled on my own |
|  | Parent |
|  | Another adult |
|  | Older child / teenager |
|  | Child of same age or younger |

1. **How long did it take you to travel to school this morning?**

*(Only tick one box)*

|  |  |
| --- | --- |
|  | Less than 5 minutes |
|  | 5 to 15 minutes |
|  | 16 to 30 minutes |
|  | 31 to 45 minutes |
|  | 46 minutes or more |

1. **How will you go back to home from school today?**

*(Only tick one box)*

**

Walked most or all the way

Cycle

School bus

 Public bus

 Car

 Motorcycle

Other. *Please* w*rite in: …………………………………………………*

1. **Is this your usual way to get to home from school?**

|  |  |
| --- | --- |
|  | Yes |
|  | No then how do you go to school usually? \_\_\_\_\_\_\_\_\_\_\_ ­­­­­­­­­­­ |

1. **Who will you travel home with today?**

*(Tick as many boxes as you need)*

|  |  |
| --- | --- |
|  | Travelling home alone |
|  | Parent |
|  | Another adult |
|  | Older child / teenager |
|  | Child of same age or younger |

1. **How would you like to be able to travel to and from school?**

*(Only tick one box)*

**

Walked most or all the way

Cycle

School bus

 Public bus

 Car

 Motorcycle

Other. *Please* w*rite in: …………………………………………………*

**PARENT’S LICENSING**

1. **Do you think your parents trust you when you are by yourself in traffic**

|  |  |
| --- | --- |
|  | Never |
|  | Sometime |
|  | Always |

1. **What do your parents think is appropriate for a child of your age to do on your own?**

|  |  |
| --- | --- |
|  | Travel by bus in day time |
|  | Travel by bus in the evening |
|  | Cycle in day time |
|  | Cycle in the evening |
|  | Walk around in day time |
|  | Walk around in the evening |
|  | None |

1. **What do you think is appropriate for a child of your age to do on his/her own?**

|  |  |
| --- | --- |
|  | Travel by bus in day time |
|  | Travel by bus in the evening |
|  | Cycle in day time |
|  | Cycle in the evening |
|  | Walk around in day time |
|  | Walk around in the evening |
|  | None |

**WALKING**

**12a) Are you allowed to cross main roads on your own?**

|  |  |
| --- | --- |
|  | Yes *(Please go to*  *Question* **12c***)* |
|  | No­­­­­­­­­­­ |

**12b) If you don’t cross main roads on your own, would you *like* to be allowed to do so?**

|  |  |
| --- | --- |
|  | Yes |
|  | No­­­­­­­­­­­ |

**12c) How old were you when you first crossed main roads on your own?**

*(Please estimate if you are not sure)*

|  |  |
| --- | --- |
|  | Age |

Not allowed to cross roads on my own

**CYCLING**

**13a) Do you have a bicycle?**

|  |  |
| --- | --- |
|  | Yes |
|  | No­­­­­­­­­­­ *(Please go to Question* **14***)* |

**13b) Are you *allowed* to cycle on main roads by your parents?**

|  |  |
| --- | --- |
|  | Yes At what age were you first allowed? |
|  | Age |
|  | No­­­­­­­­­­­ |

**13c) If you have a bicycle, are you *allowed* to ride it to go to places (like the park or friend’s houses) *without any grown ups?***

|  |  |
| --- | --- |
|  | Yes |
|  | No |
|  | Don’t have a bicycle |

**13d) How many times do you cycle in a typical week *(*both *with and without parents)* including the weekend?**

|  |  |
| --- | --- |
|  | Once a week or less |
|  | One or two days a week |
|  | Three or more days a week |
|  | Don’t have a bicycle |

**BUSES**

**14) Are you allowed to go on local buses *on your own* (other than a school bus)?**

|  |  |
| --- | --- |
|  | Yes |
|  | No |

**AT THE WEEKEND**

**15) Which of these activities did you do the weekend just passed (on Saturday or Sunday):**

*(tick the first column if you did these things on your own or with another young person)*

*(tick in the second column if you did them with a parent or other adult)*

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | *On your own or with another young person* | | | *With a parent or other adult* | | |
|  | Visited a friend’s home |  |  |  | |  |  |
|  | Visited relatives or grown-ups |  |  |  | |  |  |
|  | Visited a place of worship |  |  |  | |  |  |
|  | Went to the shops |  |  |  | |  |  |
|  | Went to dine out |  |  |  | |  |  |
|  | Went to a cinema |  |  |  | |  |  |
|  | Spent time with friends outside after dark |  |  |  | |  |  |
|  | Went to a playground, park or playing fields |  |  |  | |  |  |
|  | Played sport or went swimming (individual or team sports or lessons) |  |  |  | |  |  |
|  | Went for a walk or cycled around |  |  |  | |  |  |
|  | Went to a concert |  |  |  | |  |  |
|  | Went to a youth club (including Scouts, Guides, Cadets, Sunday school etc.) |  |  |  | |  |  |
|  | Went to a library |  |  |  |
|  | Went to cyber/net café |  |  |  |
|  | Went for tuition class |  |  |  |
|  | Went for my part time work |  |  |  |
|  | Other *(please write in):* |  |  |  |
|  | No activity |  | | | |  |
|  |  |  |  | | | |  |

**ROAD TRAFFIC CRASH**

**16) Have you ever involved in a traffic injury?**

(As a pedestrian, cyclist, in a car or another vehicle)

|  |  |
| --- | --- |
|  | Yes |
|  | No |

**17) If yes, did you get any type of treatment for injury?**

*(You can mark multiple choices)*

|  |  |
| --- | --- |
|  | First aid in school/home |
|  | Doctor’s consultation |
|  | Admitted in hospital |
|  | None, it was not that serious |

**18) Have you ever witnessed any road traffic crash?**

|  |  |
| --- | --- |
|  | Yes |
|  | No |

**WHERE YOU LIVE**

**19a)** **How safe do you feel *on your own* in your local neighbourhood?**

*(Only tick one box)*

|  |  |
| --- | --- |
|  | Not allowed out on my own |
|  | Very safe |
|  | Fairly safe |
|  | Not very safe |
|  | Not at all safe |

**19b) How safe do you think is the traffic environment in your local neighbourhood?**

*(Only tick one box)*

|  |  |
| --- | --- |
|  | Not allowed out on my own |
|  | Very safe |
|  | Fairly safe |
|  | Not very safe |
|  | Not at all safe |

**19c) When you are outside *on your own or with friends* are you worried by any of the following?**

*(Tick as many boxes as you need)*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Yes | No | Don’t know |
| Traffic |  |  |  |
| Getting lost |  |  |  |
| Bullying |  |  |  |
| Strangers |  |  |  |
| Do not feel that I am old enough to go about on my own |  |  |  |
| Not knowing what to do if someone speaks to me |  |  |  |
| Not allowed to be outside by my own |  |  |  |

**19d) Is there anything else you are worried about when you are outside *on your own or with friends*?**

Please write in:…………………………………………………………………………………………..

…………………………………………………………………………………………………………….

…………………………………………………………………………………………………………….

**ABOUT YOU**

**20) How old are you?**

|  |  |
| --- | --- |
|  | Age |

**21) Are you...?**

a Girl or a Boy

*Thank you very much for your help* 

**Now the research assistants would take weight and height of child:**

Weight of child \_\_\_\_\_\_\_\_\_\_\_\_\_ kg

Height of the child \_\_\_\_\_\_\_\_\_\_ cm

1. Pajouheshnia R, Pestman WR, Teerenstra S, Groenwold RH. A computational approach to compare regression modelling strategies in prediction research. BMC medical research methodology. 2016;16(1):107.